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OF THE UNITED STATES.

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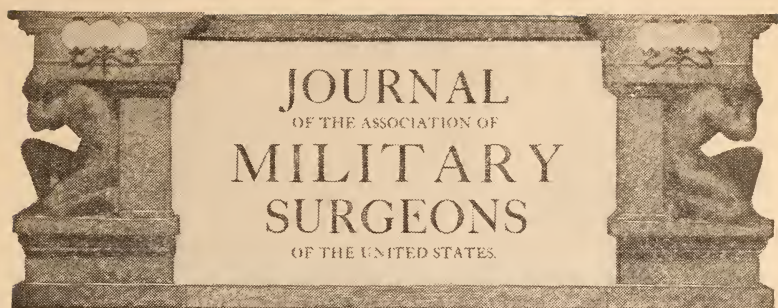
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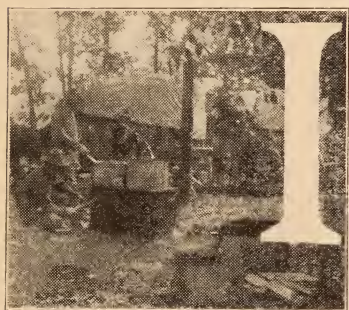
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The Seaman Prize Essay.

THE PREVENTION OF DISEASE IN THE ARMY AND
THE BEST METHOD OF ACCOMPLISHING
THAT RESULT.

By MAJOR JEFFERSON RANDOLPH KEAN.
SURGEON IN THE UNITED STATES ARMY.



IT has been said that an Army is the most complex machine which has been devised by the mind of man. This is the more true now when every science is made ancillary to the art of destruction and modern specialism has invaded every department of the military profession. Military medicine is now feeling the full force of this progressive tendency, influenced as it is likewise by the kaleidoscopic changes which have marked medical progress in the last quarter of a century. The direction of this progress has been to add to the duty of caring for the sick and wounded, which was formerly almost the only responsibility of the Medical Staff, the supervision of the hygiene of the troops and the prevention of disease among them. In this way the Medical Department has been able not only to comply with the altruistic de-

mands of the age, but to directly and powerfully contribute to the military efficiency of armies. There has also been a great advance in the way of more perfect organization and better and more specialized training for the medical personnel, as well as improvement in equipment, so that the comfort of patients has been much promoted.

Preventive medicine in its broader sense and apart from the personal and domestic point of view is a specialty with which the ordinary medical practitioner has little to do and of which he has but little knowledge either theoretical or practical. Its knowledge and practice is thus confined to a relatively small number of health officers, military surgeons (including naval surgeons), and professional epidemiologists. But because of the special conditions and exceptional environment of military life, notably in the case of armies in the field, and because there the preservation of health cannot be considered as in civil life the cardinal consideration, but must often be subordinated to the imperious demands of military necessity, we find that for the soldier many of the rules of preventive medicine either cannot be applied or must be greatly modified. So military hygiene has arisen as a further specialized offshoot of preventive medicine, and one so far removed from the well beaten paths of medical practice that civil practitioners cannot be expected to acquire proficiency in it by the mere act of accepting a commission.

The first step in the study of the prevention of disease in the Army is to ascertain what diseases most seriously affect its efficiency or cause the chief loss to the effective force. When ascertained they are divisible into the preventable and non-preventable, and for the former the approved methods of prevention, which apply to individual diseases or classes of diseases, as well as those which are of general application, will be discussed. This will, however, not complete the subject, for unfortunately it is a fact that it is no more possible for an army to be made healthy by military order than for people to be made virtuous by Act of Congress. If the sanitary rules laid down in Circular No. 1, of the Surgeon General's Office, April 25, 1898, and G. O. 117, A. G. O., of August 10, of that year, had been carefully

followed throughout the Army, the camps would have been health resorts, and the country would have been saved the melancholy lesson of more than 20,000 cases of typhoid fever in the Army in 1898, with more than 2,000 deaths. But with an untrained Army of volunteers, and a Medical Department in which the vast majority of officers and men were equally untrained, these carefully framed sanitary regulations fell nearly as far short of their purpose as did G. O. 87 of that year, enjoining abstinence from alcoholic drinks, in producing a blue-ribbon Army. No method of disease prevention can, therefore, be efficacious which does not embrace the necessary executive machinery to procure its practical working, and so some discussion of what is needed to secure an efficient Medical Department and the cordial co-operation of the line in questions of sanitation is as essential to our purpose as are the horses to a stage coach or an engine to a train.

Having thus outlined the scope of our inquiry it is in order to take up the subject of the occurrence of disease in armies.

The influence of modern civilization upon the health of mankind is, except for the submerged tenth, conservative. Men are abundantly and regularly fed and well clothed, and are protected by warm houses from the exposures of winter. Municipal government provides an abundance of water which is usually pure, and for the prompt removal of wastes and filth. The law enforces sanitary rules and compels the segregation of many contagious diseases. The sick are cared for in hospitals and in many ways the physically unfit are protected from the operation of the great natural law which provides for their extinction. By the force of custom, comforts and luxuries come to be regarded as necessities and men's wants are greatly multiplied. When however, the citizen becomes a soldier, he finds that this tendency is promptly and rudely reversed and that the wants, luxuries, and habits of a lifetime are stripped off by the rough hand of military necessity until he stands forth the fighting man of all the centuries, divested of everything except the weapon in his hand and the clothes on his back, cooking his simple evening meal before the fire, with the earth for his bed and the sky for his roof. In-

stead of abundant, well-cooked and regular meals, he eats his beans, bacon and bread at more or less irregular hours. Instead of a warm house and comfortable bed, he must learn to march all day in rain-soaked clothes and sleep on wet or frozen ground. He has to drink such water as he can get, and will not always be able to boil it. He will be not always able to protect himself from the filth of others, and will soon find that a perfect method of disposal of wastes in camp is yet to be discovered. During this period of reversal to primitive conditions it is not surprising that sickness results. The effects of an unaccustomed and usually ill-prepared diet are seen in attacks of bowel disturbance, to which are often added specific infections, such as dysentery, making up a disease group the several members of which, although not having the same aetiological factors in all cases, clinically are merged together and are considered together in military statistical reports. In those of the Civil War, this group far exceeds any other as a cause of admissions, and likewise deaths and discharges (See Tables IV and VI). Until the soldier becomes hardened to exposure, rheumatism, bronchitis, and colds contribute heavily to the sick report, but as he becomes a veteran, the rate steadily falls, being largely contributed by the recruits.

MEDICAL STATISTICS OF ARMIES.

The diseases of armies in time of peace differ markedly from those of wartime, not only in their degree of prevalence, but in their comparative importance, and while the prevention of disease of armies in wartime is the cardinal object of our study, an examination of the peace morbidity of a few of the principal armies makes an instructive basis of comparison. It is the more valuable because from the international military statistical tables can be ascertained the constant non-effective rate from each of the more important diseases, and thus we are given a better basis for estimating their effect on the efficiency of armies than is afforded by either admissions or total losses.

The following table shows the constant non-effective rate per thousand for the eight most important classes of diseases in the

armies of England, France, and Germany, as compared with our own:

TABLE I.	U. S. 1903.	England 1902.	France 1901.	Germany 1902.
Venereal diseases.....	9.63	12.09	2.38	1.88
Dysentery	4.61	.75	.26	.01
Skin diseases.....	3.00	2.07	1.13	.59
Malarial diseases.....	2.88	3.12	.64	.02
Tuberculosis.....	1.87	.52	.59	.34
Respiratory diseases*.....	1.44	1.59	3.01	2.65
Typhoid fever.....	1.02	1.61	.81	.14
Articular rheumatism.....	.51	1.53	1.02	.93

The most striking feature of this table is the predominance of venereal diseases in England and America, as compared with the Continental countries. This is due, as is well known, not to any greater laxity of morals in the former nations, but to a peculiar intolerance in the moral sentiment of the public in the English race, which will not permit the same safeguards to be taken to prevent the spread of those affections, which are used in the case of other contagious diseases. This question will be touched on later in discussing the prophylaxis of these diseases.

Dysentery, malaria, and skin diseases are higher in the English and American Armies because of their larger proportion of troops in the tropics, and respiratory diseases are less for the same reason; the tabulated reports showing much larger admissions for the former, and smaller for the latter, in the tropics than at home stations.

The large figure for tuberculosis in the United States represents rather a different method of disposal than any special prevalence of the disease. In the other services consumptives are promptly discharged and sent home; while in the United States they are transferred to a sanitarium for treatment. While the Army benefits by the former method of disposal, the health of the civil population suffers from the distribution of a contagious disease among its homes. This disease does not seriously affect the military efficiency of armies in the field, the open air life

*Includes pneumonia, pleuritis and bronchitis.

being unfavorable to its spread and exercising a curative influence, in many cases, over those slightly infected.

Typhoid fever occupies an obscure and humble position in the statistical tables of peace times as compared with its predominating and sinister importance in war. Its figure is still too high in our Army, as may be seen by comparison with the German Army.

The absence of diseases of the digestive tract, other than dysentery, must be noticed, as under war conditions these hasten to assert themselves. Of these, all must be considered as preventable except rheumatism and the respiratory diseases, and for the latter, their occurrence in barracks can be much restricted by providing sufficient ventilation and air-space.

DISEASES OF ARMIES IN WAR.

THE RUSSO-JAPANESE WAR.

Of the medical statistics of the great war now raging in Manchuria we know but little. In no recent war have military secrets been so carefully guarded as by the Japanese in this, so that it has been impossible to learn, where data relating to morbidity have been given out, what is the mean strength of the forces concerned, or even that of the medical units. Enough has, however, been learned to greatly stimulate our curiosity, and to emphasize the importance to armies of careful preparation for war in the medical department as in the ordnance or artillery, and the necessity of an adequate and well instructed medical personnel.

The First Army (Kuroki's) with a mean strength of 57,000 to 60,000 men, and an unknown number along the lines of communication, had in the four months between the battles of the Yalu and Liaoyan, 28,278 admissions from the fighting force, and 34,935 from the lines of communication; of these, 861 were dysentery, 101 typhoid, and 4,069 kakke or beri-beri.

The second Army (Oku's) in the seven months from May 1st to December 1st, 1904, had from the active army 24,642 admissions, of which 342 were dysentery, 193 typhoid, and 5,070 kakke. 5,609 cases were sent back to Japan and 40 deaths are reported at the front. The number of deaths in stationary and base hospitals has not been reported, but as 18,578 cases are re-

ported as having recovered in the field, the number of deaths along the lines of communication is probably covered by the 415 cases unaccounted for. The strength of this army was also three divisions, approximately 57,000 men. The remarkably small number of cases of both typhoid fever and dysentery, with the compensating prevalence of beri-beri, are interesting points to us, for whom the former two have been always the scourge of our armies in the field. The reasons for the freedom of the Japanese from them will be discussed later.

In the war between China and Japan in 1894-5, although the morbid statistics have not been published in full, it is known that the Japanese Army suffered severely from preventable diseases.

There were 9,658 cases of cholera, with 5,991 deaths and 13,009 of dysentery, with 1,662 deaths. The total number of deaths was 15,860 out of 227,600 men brought into the field, being a total death rate of 69 per 1,000. This army is reported to have suffered severely from beri-beri also.

THE SPANISH-AMERICAN WAR—1898.

For an accurate and scientific medical history of this war, the Santiago Expedition, the Philippine Expedition, and the Volunteer forces in the United States should be treated separately, but a companion history to the great Medical and Surgical History of the War of the Rebellion has not yet been written for it. In general terms it may be said that for the volunteer camps of the United States, typhoid fever was the principal disease; for the Philippine Expedition, malaria and diarrhoeal diseases; while malaria and yellow fever were the chief morbid factors which in six weeks reduced the gallant and well-disciplined little army under General Shafter to absolute impotence. For the whole war the admissions and total loss (*i. e.* deaths and discharges) per thousand of mean strength were as follows:

TABLE II

	Admissions per 1,000.	Total loss per 1,000.
Malarial diseases,	612	2.36 (2)
Diarrhoeal diseases,	389	1.89 (3)
Typhoid fever,	142	15. (1)
Respiratory diseases,	137	1.59 (4)
Venereal diseases,	82	1.09 (5)

The figures in brackets after the total loss give the comparative standing as to total loss of the several diseases.

TABLE III.

PHILIPPINE INSURRECTION AND PEKIN EXPEDITION, 1900.

	Admissions per 1,000.	Total loss per 1,000.
Malarial diseases,	847	2.1 (2)
Diarrhoeal diseases,	561	10. (1)
Venereal diseases,	128	1.14 (4)
Respiratory diseases,	62	1.08 (5)
Typhoid fever,	11	1.95 (3)

The high death rate from diarrhoeal diseases is due to dysentery. It will be observed that typhoid fever has sunk to a very subordinate position as compared with the Spanish War, but that malaria has held its own.

BOER WAR.

The morbid statistics of this war have not yet been published in full. The war lasted two years, during which time out of a total force sent to South Africa of 448,000 men, 12,911 died of disease. Of these, 6,177 died of typhoid and 973 of dysentery.

The prevalent causes of admission were, in order of importance:

Typhoid,
Diarrhoeal diseases,
Rheumatism, chiefly muscular,
Malaria.

It is probable that their order arranged according to total loss would be the same.

As a case mortality for typhoid of nineteen per cent is reported, it is probable that, as in our Spanish War, many of the milder cases were not recognized as typhoid and appear under other names, such as malaria and simple continued fever.

In the Franco-Prussian War the Germans lost in killed, 17,255, and from disease, 14,904, in the active army; the total admissions to hospital for the first twelve months being 589 per thousand of mean strength. Typhoid fever caused sixty per cent and dysentery sixteen per cent of all deaths from disease.

CIVIL WAR, 1861-65.

On account of the very complete records of the United States Army during this war, and the masterful way in which these records have been collated and discussed in the Medical and Surg-

ical History of the Rebellion, this history will always remain an inexhaustable mine of information to the students of military medicine. The ratios per thousand of mean strength for the principal diseases of the Army for admissions and for total losses (deaths and discharges) were as follows, these being the average annual rates:

TABLE IV.

	Admissions per 1,000.	Total losses per 1,000.
Diarrhoea and Dysentery	711	24.77
Typhoid fever*	62	13.54
Respiratory diseases	120	7.40
Rheumatism	114	5.50
Malarial diseases	522	4.04
Venereal diseases	83	1.13

In the light of our present knowledge, however, these figures require some interpretation. In the Report of the Board which investigated the "Origin and Spread of Typhoid Fever in United States Military Camps in the Spanish War of 1898," it is shown that the surgeons correctly diagnosed only about half the cases of typhoid fever, most of those improperly diagnosed appearing as malarial fever. If so wide a margin of error occurred in 1898 with all the means for exact diagnosis now existing, we may well imagine that the error was much greater before the days of blood examinations and when the clinical thermometer was not in use and small degrees of fever could not be accurately observed. Therefore, in many of the milder typhoids the element of fever would be disregarded, or they would, when diarrhoea was a prominent symptom, as it is in the majority of cases, be diagnosed chronic diarrhoea. Or, if the morning fever was slight, it would be overlooked and on account of the evening rise be set down as intermittent fever, especially as it has been shown by Reed, Vaughan, and Shakespeare, that mild typhoid is often in fact intermittent in type. A large proportion of the cases of remittent fever should also be transferred to the credit of typhoid. If the typhoids, typho-malarials and remittent fevers are added together, the death rate for them all is slightly greater than that which is given in the report above mentioned for typhoid fever in the

*Includes typho-malarial and simple continued fevers.

Spanish War, whereas if a considerable proportion of these were really malaria, the death rate should be much less. Thus the typhoid cases should be largely increased at the expense of the malaria and chronic diarrhoeas. We must, therefore, give this disease the same bad prominence which it attained in the Boer War, the Spanish War, and the Franco-Prussian War as the leading cause of military disability and of death in armies, and dysentery should be awarded the second place. It should be noted that during the Civil War, chronic diarrhoea and dysentery seemed, in many cases, convertible terms, and in the reports of autopsies, the typical ulcers of dysentery were found in many of the cases recorded as chronic diarrhoea.

The medical statistics of the Mexican War would be of special interest as showing the diseases which might be expected to occur in an expeditionary force operating under the great variety of conditions of climate and terrain to be found in the extensive territory of our southern neighbor. A comparative table of losses of United States troops in that war, with those of the French and British in the Crimea, shows that in spite of the terrible losses of the latter from disease, of which further mention is made below, our record was worse (See Appendix). Intestinal diseases were the chief causes of loss, especially the so-called "Mexican diarrhoea." The quaint and vigorous remarks of Surgeon General Lawson on the method of raising troops for that war, and its effect on their sanitary condition, are of permanent interest and application whenever volunteer troops are called into the field, emphasizing as they do, the importance of careful physical examinations, a matter which there is always a tendency to disregard or waive under political pressure in times of popular excitement (Report S. G., Nov. 9, 1846, pp. 4-8). It is regretted that space does not permit of this quotation.

The Civil War seems to mark the beginning of a new epoch in the morbidity of armies, because the two infectious diseases which had before that time been the most formidable agents of destruction to the armies of the world did not appear, and seem to have since then ceased to be among the regular camp followers in war, and are now only occasional visitors, namely typhus and cholera.

To appreciate the appalling destructiveness of these diseases it is only necessary to go back to the Crimean War and read the melancholy descriptions of Scive, for the French, and Milroy, for the British Army.

In the winter of 1855-56, nearly 20,000 cases of typhus occurred in the French Army before Sevastopol, of which one-half died, including thirty-five medical officers. In addition thereto, 53,000 patients were sent to the hospitals at Constantinople, of which one-third perished, together with a large number of the attendants, from this most contagious of diseases.

Cholera slew both Lord Raglan, the British commander, and the French Marshal, Saint Arnaud, and in the months of July and August, 1855, lost to the French Army before a shot had been fired, as many men as were killed by the enemy during the entire campaign and siege. In addition to these losses there were repeated other outbreaks of both diseases.

The French lost in the Crimea, 69,229 men out of 309,268 sent there, and about 65,000 were invalided home. About 7,500 fell in battle. The British sent 111,313 men, of whom 21,097 died. They had 25,841 cases of typhus and typhoid, with a death rate of twelve per cent and one-fourth of the total mortality from disease was due to cholera.

Typhus followed the march of the armies of Napoleon and of his opponents and was especially prevalent in the campaigns of 1812, 1813, and 1814, and decimated the unhappy survivors of the retreat from Moscow. It was the invariable attendant of the wars of the Eighteenth Century and of the Middle Ages, and in the Thirty Years War, claimed more victims than the sword. It was the characteristic camp disease as shown by its older names, *febris bellica*, *febris castrensis*.

In the last quarter of a century this disease has become rare, and few of the practising physicians in America have seen a case of it. It is to be hoped that under the improved conditions of modern civilization, it may disappear. We have at least ground for the belief that with the great advance that has been made in preventive medicine our armies as well as our cities, may hereafter be kept free of it.

Cholera cannot, unfortunately, be so lightly dismissed as either obsolete or having no terrors for the American soldier.

Asiatic Cholera is spread by the taking into the mouth of the specific organism which proceeds from the intestinal discharges of another patient. In its method of spread it is closely parallel to typhoid fever, being disseminated by the agency of infected water, milk and other food, by infected hands, and drinking utensils. It survives long periods in clothing and bedding. It is carried on the bodies and in the intestines of the common fly, and as was pointed out by Sternberg in 1892, no system of house quarantine can be effective which does not take into account that ubiquitous insect. It is not immediately destroyed by a freezing temperature. From the similarity of their manner of transmission, it is evident that cholera will spread under the same conditions as typhoid, if once introduced, and no army can be considered safe from its ravages if once it should appear in the theatre of operations. The methods of prevention will naturally be the same as for typhoid, with the addition of quarantine against infected places to prevent, if possible, its introduction. This latter precaution cannot be used against typhoid, as, like the poor, we have it always with us.

Yellow fever, plague, and beri-beri are other occasional visitors which are not, however, to be feared by our Army. The first is, as has long been known, easily shaken off by moving commands, and to the two latter we seem relatively immune, though to Asiatics they are still formidable.

Passing then to the common camp diseases we see from the preceding summary of the morbid statistics of recent wars, those which seriously affect the efficiency of armies are:

1. Typhoid fever,
2. The diarrhoeal group, including dysentery,
3. Malaria,
4. The respiratory group,
5. Rheumatism, articular and muscular,
6. Venereal diseases.

Of these the first three and the last must be considered preventable diseases. The occurrence of the respiratory affections

can be, to a considerable extent, diminished but not entirely prevented, by providing proper ventilation. The rheumatic group is, in the present state of our knowledge, to be considered under military conditions as non-preventable, although it is now recognized that acute articular rheumatism is an infectious disease with its port of entry probably through the tonsils.

The measures of precaution can be best discussed after giving briefly the characteristic features of each disease as they appear under the conditions of the soldier's life, a knowledge of the aetiology and climatical features of each being assumed, as it is not possible, within the limits of an article, to give them fully or cover the whole field of military hygiene.

Typhoid fever is today, on account of its wide dissemination, the persistent vitality of the infecting organism, the duration and severity of its attack and its large death rate, the most formidable infectious disease with which we have to contend in military life. With the improved diagnostic methods of recent years the widespread occurrence of mild and atypical forms of this disease is being more and more recognized, and its importance is being correspondingly appreciated. The report of the Typhoid Board in 1898, threw a flood of light on this subject, and remains a permanent monument to the vast labors and scientific acumen of the members of that board—Reed, Vaughan, and Shakespeare. They studied the medical histories, company by company, in 106 regiments, of which the records of ninety-two were sufficiently complete to be available. In these regiments occurred 20,738 cases of presumable typhoid, with 1,580 deaths, a case mortality of 7.61 per cent. In addition to these cases they show that the short attacks of fever of a few days duration only, which were diagnosed malarial, had a distinctly protective influence against typhoid. Thus, out of the 55,829 cases studied with reference to this point, 2.7 per cent of these who had such previous attacks, contracted typhoid, while of those who had no such previous so-called malarial attack, 16.1 developed typhoid. Also to their surprise it was found that previous attacks of diarrhoea and gastro-enteritis, instead of exercising a predisposing influence to typhoid infection, were in a like manner protective, the latter

disease occurring in 6.8 per cent of those with a history of intestinal troubles and in 15.3 per cent of those with no such history. The inference is, of course, that many of these cases of slight fever, diarrhoea and gastro-intestinal catarrh, were in fact mild typhoid. This was subsequently confirmed by one of the board when investigating a camp epidemic in Cuba. He found that many soldiers who had been sick of the milder affections above mentioned, gave on examination of the blood, the characteristic Widal reaction of typhoid. So it is evident that our statistical tables do not properly represent the prevalence of typhoid, the figures of which should be largely increased, and those of malaria and diarrhoeal diseases correspondingly diminished. Naturally such mild cases were not treated as infectious and so must have contributed greatly to the spread of the disease.

Typhoid is spread only by the introduction into the mouth, of the specific bacillus. This organism has remarkable tenacity of life. It has been demonstrated to live and propagate in a suitable soil, eleven months after it was planted; in sealed bouillon cultures it has lived over a year; in clothing for several months; and dried on threads in a dessicator over sulphuric acid, for 203 days. In distilled water it will live for three months, but in non-sterile water or sewage or sea water its life is shortened by competition with the common water bacteria.

It is discharged in vast numbers with the excreta of the sick and frequently persists in the feces for several weeks during convalescence. In almost one-fourth of the cases it is present in the urine often in enormous numbers so that a single drop may contain millions, and this condition may persist for long periods of time. "Because of the frequency with which it is voided its comparative inoffensiveness, its easy dissemination and the relatively great number of organisms present, infected urine is the most dangerous excretion of the typhoid patient" (Vaughan). It is evident, therefore, that every case of typhoid in a camp is a potent source of danger to his comrades and during his illness and convalescence he should be surrounded with the same precautions to prevent infection as would be taken in a case of cholera. If this were systematically and carefully done,

camp epidemics would be far more easily and quickly brought under control, as has been demonstrated by the success which has attended the so-called "stamping out method" of Koch, which is essentially the treatment of typhoid as a highly contagious disease. It is stated that in the Japanese Army it is regarded as a contagious disease and treated by strict isolation.

Unfortunately this will not suffice, for as has been shown by the Typhoid Board, every new regiment brings the infection into its camp of mobilization, and the mild unrecognized cases can be counted on to spread the infection when once introduced. Therefore a systematic disinfection of all excreta must be practiced in all permanent camps, and the surface of the camp site carefully protected from pollution. Not only the gross and evident pollution with fecal matter must be avoided, but also that from kitchen slops, scraps of food, offal, and other wastes which contaminate the soil and make it a favorable medium for the growth of the organisms of typhoid, dysentery and infectious diarrhoeas. The tying of horses about the tents should not be permitted, and the corrals and stables should be well drained and have careful daily police. An additional reason for this lies in the fact that the common fly deposits its eggs chiefly in horse manure and to a neglect of this precaution must be attributed in large measure the myriads of flies which plagued the camps of the Spanish-American and Boer Wars, and visiting with impartial activity the sinks and kitchens proved efficient carriers of contagion. The fouling of camp sites by urine is a dangerous practice and yet one that is very common especially at night. Yet it is one against which it is very difficult to institute effective measures as those in authority do not readily appreciate its importance, on account of the inoffensive character of this secretion. The urine is probably, even when not infected, the waste product which most promptly renders the soil propitious for the growth of the typhoid bacillus. The habit of urinating about the camp at night can only be stopped when urine tubs are provided and placed in the company streets at night. These should contain a disinfectant, and if of wood (wash tubs or half-casks) should be coated inside with tar. The writer has a sad memory of how all

his efforts to have this provision made for a typhoid infected command during the Spanish War were unavailing because the Quartermaster refused to purchase the casks necessary to make the tubs. While it should be impossible for a staff department not charged in sanitary responsibilities to obstruct necessary measures of this kind, the indifference of commanding officers is usually in part responsible.

The disposition of excreta is the most important and often the most difficult problem of camp hygiene.

Many ingenious devices have been at various times brought forward to solve this vexed question but most of them lack portability or are for one reason or another not practicable. For a command which is marching, the trench latrine will always have to be depended upon, and the sanitary officer will have to use his ingenuity and experience to obviate its defects. It is needless to say that the regimental surgeons should be consulted as to the location of the sinks, and where the ground is stony or the ground water near the surface, questions of alignment must not be insisted on but suitable spots selected even if a somewhat longer walk is involved. They should be at ample distance from the kitchens preferably on the other flank of the company. The company cook will be the cleaner, if he works under the captain's eye, and it is better that the officers should suffer occasional discomfort from smoke or boiled cabbage than that the men's food should be infected with typhoid or dysentery. It is advisable, whenever practicable, to burn out the sinks each forenoon with petroleum. This produces a superficial disinfection and destroys the paper which is otherwise apt to be blown about the camps. It also destroys the eggs and larvae of certain flies which may be deposited there. But this burning should not take the place of the careful use of dry earth several times a day. When it rains and there is no dry earth to be had, a disinfectant should be used. Of course sinks should always be ditched like tents to prevent flooding. When transportation will permit, each company should have a fly tent or old wall tent to cover its sink.

It is stated above that the trench latrine is to be relied on for marching commands. Its use should, however, *be restricted*

to temporary camps and emergency use. This may be done safely, as moving commands are healthy and do not, as a rule, suffer from typhoid or dysentery. If the command remains longer than two days in one camp, lumber should be obtained, if practicable, and each sink progressively improved so as to comply as far as possible with the following requirements:

1. It should be covered either with a tent or other roof, and should of course be ditched, to prevent its being filled with rain.

2. In order to exclude flies the trench should be boxed in and holes constructed with hinge covers. The hinge may be made of leather or canvas.

3. A bar running along above the seat should prevent the covers being raised quite to a right angle. This makes them self-closing and prevents squatting on the seats.

4. A urinal should be provided at one end or outside. This should be either a tub or a tarred trough leading to the trench.

5. Behind the seats should be a sloping lid which can be raised to permit of the use of dry powdered earth or lime.

If the latter is used it should be fresh, unslaked and preferably in lumps which should be broken up before use. Finely powdered lime becomes air slaked and inert in a few days.

If the trench becomes flooded it should be disinfected by a liberal use of unslaked lime, chloride of lime, carbolic acid, or bichloride of mercury, in order that an overflow may not carry infection broadcast. If troops are to be kept in one camp longer than two weeks it should be regarded as a permanent camp and the trench latrines filled up and abolished. They should be replaced by the sanitary trough sink devised by the board above mentioned and adopted for use in the Army by G. O. 170, A. G. O. 1899. These sinks are very ingeniously constructed and can be readily taken apart for transportation. Each sink suffices for 100 men while the excavating apparatus will do service for two or three regiments. This apparatus works admirably under all conditions except where the soil is so sandy or so soft that the excavator cannot be pulled when full. Under such cir-

cumstances it may be necessary to corduroy a short road to the place of discharge. This system has always given perfect satisfaction whenever tried, and is believed to be the best yet devised, when sewers cannot be provided. The use of toilet-paper is necessary with this apparatus as the excavator refuses to take up Sunday editions of the metropolitan journals. This, however, is not a disadvantage, as toilet-paper should be supplied to all soldiers in the field. The reason for this is apparent to any one who has had occasion to see soldiers in the field stripped for examination. The drawers of most of them will be found to be soiled with fecal matter and this is especially the case with patients admitted to hospital with typhoid fever and diarrhoea—the very cases in which such a condition is most dangerous. The reason for this lack of cleanliness is because soldiers are not supplied with a proper detergent paper and the result is a dangerous soiling of the hands and clothing, which is undoubtedly an important factor in the spread of typhoid by contact, in ways which will be presently described.

Kitchen garbage and slops should never be thrown upon the ground. Such parts of it as can be burned should go into the kitchen fire, while the wet portion should, in temporary camps, be buried, and in permanent camps placed in a slop can and carried away by a sanitary garbage cart of the pattern in use by the Quartermaster's Department. One of these can easily do service for a brigade. Its ultimate disposition should be in a crematory, of which many forms have been devised. The stable sweepings should also be thus disposed of unless there is a commercial demand for them.

The ideal method of disposing of all camp wastes would be by incineration and a number of different patterns of crematory latrines have been invented in which excreta could be destroyed by combustion in situ and without the necessity of handling or removal. These have, however, in practice been found either not transportable or offensive from the products of combustion, or both, and a perfectly successful device has not yet been found. Prior to 1898 the attention of sanitarians and the medical profession generally was directed almost exclusively to infection

through water and food as the method of transvection of typhoid fever, and it was believed and taught that if soldiers would boil their drinking water they would be healthy. But it was found, to our surprise, that the disease spread in camps like that of Jacksonville, with an artesian water supply which was above suspicion, with the same certainty as in those where the purity of the water supply was open to doubt, and one of the most interesting and valuable facts brought out by the Typhoid Board, was that water pollution played a subordinate role, and that the disease occurred in a series of company epidemics, being spread as a contagious disease from man to man. To those familiar with the close contacts of camp life, and the difficulties in the way of personal cleanliness, it will be evident that contact transmission can occur in many ways. The hands of patients, especially those with mild cases, would readily become soiled with the infected discharges and would transfer such infection to certain parts of the tent which are often touched by the hands, and to the utensils used in common. The front vertical pole of a wall tent, and the flap of a conical wall tent are often touched by the hand of each soldier entering it. These places will, therefore, soon become infected and will pass it on to others. Such a local culture will soon die out in bright sunny weather but it will be often renewed. Cultures will also be brought from the latrines or other localities polluted with the urine and feces of mild or convalescent cases, on the shoes, and distributed on the tent floors. The clothing and blankets will also soon acquire it from the sources above mentioned. The bacillus may also be passed around on books, playing cards and other articles of common use. But, although these contact methods of acquiring typhoid have assumed enlarged importance, the necessity of guarding against infection from water, milk, and other articles of food must not be minimized. Fly infections must be prevented by protecting the food and also the latrines from flies, and by diminishing their number by an efficient camp police. Cockroaches will also convey the typhoid bacillus to food (Hare).

The sterilization of water is the most difficult and the most important of the precautions relating to food, and it is necessary,

not only as a protection against typhoid, but also against dysentery and the specific diarrhoeas. The bacteria-proof filters, such as the Pasteur and the Berkefeld, are not adapted to camp use on account of their fragility. Sterilization by other means is, therefore, necessary, and of these boiling is the reliable and the most universally practicable. If this has to be done in the ordinary way, it requires much fuel and much time, especially as the water must be again cooled. The Forbes sterilizer, which is now furnished by the Quartermaster's Department, obviates this by the ingenious device of making the water, after boiling, give up its heat to the inflowing current, so that the sterilized water is discharged only about five degrees Fahrenheit warmer than when it enters the apparatus. The whole volume of water at seventy-two degrees Fahrenheit has thus to be raised practically five degrees Fahrenheit instead of 160 degrees Fahrenheit, and the immense economy in fuel and time is apparent. This apparatus required petroleum for fuel. Its value has been thoroughly tested in the Philippine service, and to it, in large measure, we owe the immunity of our troops from serious loss while the native population were perishing around them by thousands, in the great cholera epidemic of 1902-3. By a recent improvement the inventor has made it impossible to force over unboiled water by increase of pressure, as was sometimes formerly done by careless and ignorant attendants who desired to increase the output.

A German apparatus has been used with satisfaction by their African Colonial troops. It is conveniently carried on wheels and aerates and filters the water in addition to sterilizing it. Either wood, coal, or petroleum can be used as fuel. The output is 500 liters an hour (Henneburg's Army Drink-water Apparatus).

The chemical disinfection of water has lately received much attention on account of its ready applicability to military uses, but the results have unfortunately been, as yet, unsatisfactory.

Water carts are used in the armies of other nations and their introduction into that of the United States should be seriously considered.

The introduction of typhoid by food supplies, such as milk, ice, and oysters, can be prevented only by the vigilance of the

regimental medical officers supported by the sanitary inspector of the Division. The precautions to be taken differ in no way from those in civil life.

An important measure of camp hygiene, and one always practicable, is the regular moving of the rows of company tents so as to permit the sun to disinfect the soil surface covered by them. If each row of tents is shifted the depth of a tent toward the next company on either side, the arrangement of the camp remains undisturbed while the sites formerly covered are exposed. This should be done weekly and at the end of that period they could be shifted back to the old site. This does not, however, obviate the necessity of moving the camp where evidences of soil pollution become apparent. One of the most serious errors of the Spanish War was the continuous occupation for months of the same camp sites, and the disregard of recommendations of medical officers that they be moved. The conveniences which had been created—tent floors, piped water, shower baths, mess houses, store houses, etc., at heavy expense to the Quartermaster's Department, naturally made such moves unpopular with commanders and supply officers.

Sunshine is, fortunately, one of the most efficient destructive agents for the typhoid organism, destroying it in one and a half to two hours, and most other pathogenic organisms are equally susceptible to it. Diffuse daylight, though much less potent, is also a valuable agency. The value of both is enhanced by desiccation, but of course their penetrative power in clothing and other opaque material is limited. They are of great value, however, in camp life, and soldiers should be required on all bright days to loop up the walls of their tents and suspend their blankets or clothing in the sun. When a command is infected with typhoid, however, a systematic disinfection of bedding and clothing by steam or disinfectant solution becomes necessary in addition to change of camp and the segregation of all cases, in order to shake off the disease.

With regard to the freedom from typhoid fever and dysentery, of the Japanese Army in Manchuria, it is of the utmost interest and importance to determine, as far as is possible with

the very meagre data available, what are the reasons therefor.

Is it, as is generally believed, due (1), to a strict observance on the part of the entire Japanese Army of the sanitary regulations prescribed by their admittedly excellent medical staff; or (2) have the Japanese a constitutional and racial relative immunity to these diseases; or (3) does their simple and chiefly vegetable diet produce intestinal conditions unsuited for the development of the *B. typhosus* and *B. dysenteriae*, or a bacterial flora with which these organisms cannot successfully compete? As against the first, we have the testimony of the observers who have been authorized to accompany the armies and who thus have had the best opportunities for observation, that the Japanese soldier on the march is quite as regardless of camp police, or of safe-guarding his water supply as is the American volunteer. It appears that the delay in providing sinks was such that where there was a halt of several days duration, walking with comfort became difficult on account of the wide-spread contamination of the camps with excreta, while offal was strewed about and sources of water supply were used for bathing in a way which was a shock to European ideas. On the other hand there is evidence that in the rear of the army and in camps of permanence, careful attention was paid to camp police, and the usual sanitary precautions were taken. There is reason to believe that the Japanese, in common with other Asiatic races, are less liable to typhoid than are Western races. An examination of the last obtainable Japanese census (1896), shows that the death rate from this cause was .213 per thousand of population, while that in the United States was, by the census of 1900, .416 per thousand. As the case mortality is much higher in Japan, it is probable however, that a considerable proportion of the milder cases, especially among the children, are not correctly diagnosed. Recent investigations in India by means of the serum agglutination and sedimentation reaction test, show that while that race is much less susceptible than are Europeans living under the same conditions, still the disease is much more common among native children than has been supposed. When the conditions of peasant life in Japan, and the large use of human excreta for fertilizing

purposes, with the repeated handling and spreading of it over the soil, are considered, it is highly probable that a vast majority of the individuals who are not naturally immune, become so by an attack before reaching the military age, and so Japanese armies come into the field in a condition of relative immunity.

It is probable that the European armies of a century ago and preceding times, enjoyed a like protection, because the general ignorance of sanitary matters and the failure to safe-guard sources of water supply must have resulted in a routine infection of the juvenile population with consequent protection in adult life. Of course the occurrence of second attacks is recognized, but the protective influence of a first attack is very great.

Thus in military life, the soldier of today pays this penalty of susceptibility for the protective influences with which modern civilization has surrounded him in his home life.

The relation of a vegetable dietary to typhoid susceptibility is a question as yet of conjecture rather than demonstration. It is said, however, that among the native troops of the British Indian Army, the Ghurkas, who are meat-eating and alcohol-drinking, show a much higher susceptibility to this disease than other native regiments.

It must be observed, however, that this theory of relative immunity will not explain the small morbidity of the armies of Kuroki and Oku from dysentery, a disease from which both the civil population and other Japanese armies have at times suffered severely. It has, however, been pointed out above, that marching armies are not as a rule sufferers from these diseases, but only those which have remained long on polluted camp sites. When, also, the national Japanese habit of taking their water boiled in the shape of tea, and the fact that the Manchurian wells are, as a rule, deep and of excellent quality are considered, their good record may be explained on the supposition that sanitary precautions were seriously and carefully carried out in their fixed camps, where such precautions are practicable, even though they were, as we know to be a fact, neglected by marching troops, where elaborate sanitary measures are impossible of execution. For the beautiful dream of a Truly Sanitary Army, in

which the bacteriologist marches on the skirmish line, and the exhausted soldier waits by the well-curb for laboratory reports before quenching his thirst, is impossible from the scientific as well as the military point of view. Fortunately it does not seem in practice to be necessary.

DIARRHOEA AND DYSENTERY.

The following from the Medical History of the Rebellion shows the importance of this group in the Civil War:

“These disorders occurred with more frequency and produced more sickness and mortality than any other form of disease. They made their appearance at the very beginning of the war, not infrequently prevailing in new regiments before their organization was complete, and although as a rule comparatively mild at first, were not long in acquiring a formidable character. Soon no army could move without leaving behind it a host of the victims. They crowded the ambulance trains, the railroad cars, the steamboats. In the general hospitals they were often more numerous than the sick from all other diseases, and rivalled the wounded in multitude.”

They caused 57,265 deaths in the Federal armies out of a total of 157,004 deaths from disease and over 18,000 discharges. From these numbers must be deducted as above printed, a large but indeterminate number of typhoid cases, but there still remains an imposing number which, while the result of several distinct infection agents, permits of a grouping under one head not only on account of clinical similarity, but because of the fortunate identity of the preventive measures which are required. By far the most important morbid agent of this group is the bacillus dysenteriae of Shiga, which is the cause of the epidemic dysentery of armies, especially in temperate climates. This bacillary dysentery is stated by Caldwell to have been the only type seen in the Boer War. From its invariable appearance in that war among troops occupying, even for a short time, foul camp sites, that author is induced to believe that the peccant organism was one which although primarily not pathogenic or capable of causing only simple diarrhoeas, under such favorable conditions develops a progressive infectiousness and malignancy. This is a

somewhat favorite theory with military surgeons, and is convenient as accounting for outbreaks which it is otherwise difficult to trace.

Before the publication of the report of the Typhoid Fever Board, it was often invoked to account for camp epidemics of that disease. But such an autochthonous origin is not necessary in the light of recent investigations of Flexner and others, which show that this organism (*B. dysenteriae*) is probably as ubiquitous as that of typhoid fever, and is a common cause of the severer diarrhoeas of civil life and of the very fatal summer diarrhoeas of children. In its power of independent saprophytic existence in water and in soils in which nitrates are present, it probably rivals *B. typhosus*. Caldwell notes its proclivity to attack those suffering from disordered conditions of the intestinal tract, and this was also noted by observers in the Civil War. In this respect it differs from typhoid fever, according to the observations of the Reed Board above noted.

Amoebic dysentery is less common in temperate climates than the bacillary, and is much less contagious; its chief mode of spread being by water and infected fresh vegetables and fruit. Where water sterilization, with culinary cleanliness, is practiced, it is not a source of danger.

Catarrhal diarrhoeas are, as has been seen, a feature of the initiatory period of military service, and are due to the abrupt change of diet and to improper preparation of the food. While they become less frequent as the soldier becomes seasoned to camp life, and as the company cook acquires skill, they are of importance as increasing the susceptibility of the soldier to Shiga infection. Another form of simple diarrhoea is caused by chill of the abdominal organs when hot days are followed by cool nights. It is in this complaint that the abdominal band is of real value. This at least is the personal experience of the writer. That much abused contrivance acquired its unpopularity among American soldiers because it was worn in the daytime or when the nights were not cool, greatly to the discomfort of the wearer, and it was also found to have no protective influence against the intestinal infections.

MALARIA.

Our knowledge of the life cycle of the causative agent of malaria is probably the most brilliant and valuable medical discovery of the last quarter of a century, although popular recognition and application of this knowledge has been singularly slow. It is now comparatively easy for any one in civil life, by a careful and methodical use of screens and mosquito nets, to avoid malarial infection, if, as is usually the case, the conditions of his life as to night exposure are under his own control. Unfortunately, however, the soldier has no such personal control. He must do his tour of guard even if anopheles are waiting to bite him, and follow his command into regions no matter how insalubrious. His list of necessities is also unduly long when measured by his capacity to carry them, while transport officers protest against any further loading of the regimental wagons. And yet, when the great prevalence of this disease in all our wars is considered, the imperative necessity of taking all possible precautions against it is evident. Fortunately these are not such as will unduly burden the soldier or the wagon train. Medical authorities are now agreed that malaria is carried only by mosquitoes, and these only of one species. This species is not migratory, or inclined to travel great distances, and rarely bites except at night. If, therefore, soldiers when campaigning in regions known to be malarious, are provided with a head net or a square of good mosquito net weighing only three or four ounces, they can, to a very great extent, protect themselves. Head-nets that can be worn with the campaign hat should be provided for the guard as was done for the troops which occupied Cuba after the Spanish War. As the native population is the source of infection for the mosquitoes, the neighborhood of villages and farm houses in malarious districts should be avoided as far as possible in selecting camp sites. In camps of permanence, sanitary officers will of course attack the breeding places of mosquitoes with petroleum, or by drainage, and patients suffering from the disease should be carefully protected with nets to prevent its spread. Mosquito nets of excellent quality, with suitable frames, are furnished to all field and camp hospitals for this purpose. The prophylactic adminis-

tration of quinine is also a valuable resource, and should always be resorted to when a command is seriously exposed, and nets are not provided. The method of Koch, which is based on a study of the life cycle of malarial parasite, should be used. By this, quinine is given two days in each week—a gram the first day, half a gram the second, and then none for five days, when it is again given in the same way. The use on the exposed skin of the essential oils and petroleum, or a mixture of the latter with vaseline or grease, also affords a certain amount of protection.

VENEREAL DISEASES.

These diseases, as shown in Table I, contribute greatly, and in the English-speaking armies enormously, to the constant non-effective rate. They are more prevalent in peace, however, than in war, and in troops having foreign stations, especially in the tropics, than at home.

A rate of prevalence as high as that in our Army, and especially in that of Great Britain, is a very serious factor in reducing military efficiency, for such men usually promptly break down under the strain of active service and by the development of suppurative adenitis and other complications become unfitted for duty for long periods.

The vast difference between the European armies and those of the English race is due to the fact that in the former, similar precautions are taken to prevent the spread of venereal affections as with other contagious diseases. To the latter nations, however, it has seemed best not to recognize what is offensive to their moral sense, even though the social fabric is undermined, and these diseases are spread, not only among the incontinent, but wreck the health of pure women and innocent children. This is permitted in order that the law may not, by recognizing the existence of the prostitute, seem to extend a quasi-legitimacy to her trade. It is also claimed that the registration of prostitutes does not effectually accomplish its aim of reducing venereal disease. Without discussing this question with respect to the civil population, there can be no question of its efficacy with respect to garrisons and armies, and especially where the inspection of

the women is combined with weekly or other regular examinations of the troops for the purpose of detecting venereal disease. These latter inspections have the additional value of making it possible to penalize those who fail to report themselves for treatment or who expose themselves to repeated infections.

These inspections of troops were put in practice in a number of the garrisons of Cuba during the military occupancy of the Island without exciting any strong opposition, and it is believed that they could be introduced throughout the Army, without exciting popular clamor, and with great benefit to its health. In time of war, when cities are occupied and venereal diseases become prevalent, the registration and inspection of prostitutes can be added as a measure of military necessity and without exciting criticism, as was done with such signal success at Nashville, by General Granger, in August, 1863, and following this example about a year later, at Memphis, Tennessee, by the military authority in conjunction with the civil government of the city.

In time of peace every possible means should be taken to keep the soldier away from the places where he contracts these diseases, by providing him reasonable and attractive amusement and recreation in the evenings. To this end the restoration of the canteen, with the regulated sale of beer and refreshments, is desirable, with all its recreation features developed, such as libraries and reading rooms, card and billiard rooms, gymnasium, bowling-alleys and swimming pool. No money could be better invested or would give greater return in efficiency of the troops. The increase of venereal diseases and alcoholism since the abolition of the canteen is too well known to need the use of figures here for proof. The two diseases go together; the low saloons which have sprung up in the vicinity of all posts, always have the brothel features at hand or close by, and after the soldier has been made drunk he falls an easy victim to the prostitute.

The measures which have been recommended for the control of venereal disease will at the same time diminish alcoholism. Both are children of idleness and ennui, and are more prevalent

in the dull round of garrison duties than amid the strenuous and exciting conditions of war.

In the list of most important diseases of the United States Army, in the Civil War (Appendix), it will be seen that venereal diseases stand fifth as regards number of admissions and seventh as regards total losses.

Vaccination being performed as a routine measure upon enlistment, mumps and measles are the only eruptive fevers which are of importance in our Army. These always assert themselves in camps of mobilization, and the latter, from its tendency to leave pulmonary sequelae, is a cause of losses as well as admissions. This is shown in Table VI (Appendix), for the Civil War. Measles and mumps patients are usually treated in separate detached camps at some distance from hospital limits, and those from volunteer regiments miss greatly the companionship of their comrades and are much inclined, unless very closely guarded, to slip off and pay surreptitious visits to their regiments, with results that are evident after the usual period of incubation. It is, therefore, advisable to have the hospitals for these diseases as distant as is compatible with administrative convenience, from the troops and to deprive all patients of their clothing, putting them in pajamas and long woolen dressing gowns, which, though comfortable in hospital, are not adapted to visiting.

The uniform and equipment of the Army are satisfactory, and have no defects which injuriously affect the health of the soldier.

As regards his food, there is no respect in which civilized man is so conservative and so opposed to radical changes as in the matter of diet. Nor is this conservatism altogether to be deplored, for dietary habits which are the result of custom and environment through generations, cannot safely be made the subject of hasty generalizations or rash experiments. There is one innovation which the writer has preached for years with partial and local success, namely, a greater use of soups and sauces in soldiers' diet. A great improvement was made some years ago in the fare of the British soldier, simply by the introduction of the

stock-pot, and a like advance always marks its introduction into a company or hospital mess in our Army. It is the best remedy for the monotony, which is the chief fault of our ration as issued. In the field the boiling of meat and vegetables together affords a nutritious and appetizing soup, and is the only way in which lean, tough meat can be cooked so as to make it good and digestible. Although there seems little in the Japanese commissariat which can be adopted for the American Army, the Russian soup-cart is certainly worthy of imitation.

ADMINISTRATION AGENCIES.

It has been already stated that however excellent are the sanitary regulations, and however wisely adapted by experience to meet the special limitations and needs of military life, they will not make an army healthy unless there is a proper adjustment and co-ordination among the different agencies involved in carrying them out. These are:

1. The Medical Department, which is the originating, guiding and informing agency, which has the duty of caring for the sick, and preventing disease.

2. The line officers beginning with the commanding officer, who must order and enforce the execution of general hygienic measures, and the regimental and company officers, who must understandingly execute general measures, and in addition must educate their men in matters of personal hygiene.

3. The soldier, who must be taught the simple rules of personal hygiene and must put them into practice.

4. The staff department which is charged with the duty of providing the sanitary apparatus and supplies and the trained personnel for running them.

1. The Medical Department must be brought to the highest state of efficiency by being given adequate numbers for its work and adequate inducements to attract first rate men. The President in a special message to Congress on January 9, 1905, said: "I am satisfied that the Medical Corps is much too small for the needs of the present Army, and therefore very much too small for its suc-

cessful expansion in time of war to meet the needs of an enlarged Army and in addition to furnish the volunteer service a certain number of officers trained in medical administration. * * *
If the Medical Department is left as it is, no amount of wisdom or efficiency in its administration would prevent a complete breakdown in the event of a serious war."

To the present organization for field service, must be added a Medical Inspector for each corps and division. The new division numbers close to 20,000 men and its chief surgeon will be so overwhelmed with questions of supply and administration, and those relating to the numerous medical personnel, that he will not have the time to act as Medical Inspector. To do all the work laid down for Medical Inspectors by Par. 645, Field Service Regulations of 1905, will take the entire time of an active capable man, and will require many hours out of his office on horseback and on his feet. The Division Medical Inspector should have as his assistant a competent bacteriologist, who can make blood examinations, water analyses, etc.

2. The education in sanitary matters of line officers is the flywheel of the machine. Until it can be put in motion no sanitary system will be effective. The whole question of the necessity for their training and the means of obtaining it has been discussed in a very thorough and admirable manner by Captain Peter E. Traub, 13th Cavalry, in the Seaman Prize Essay of the Military Service Institution for 1904. As shown therein, the enforced study of military hygiene is necessary at the military and naval academies, and the post and service schools, and its practice should be made an important feature in all maneuvers. The medical officers will give this instruction to officers. In the Japanese Army, sanitary instruction is a part of the regular course at the military schools and enlisted men are instructed also, both by company and medical officers.

3. For the instruction of the individual soldier in the elements of personal hygiene, his company officers must be relied on. This must be done by precept and example, by formal lectures and informal personal advice and instruction, and enforced by military

discipline when necessary. Every soldier should be required to learn perfectly and understandingly the rules of personal hygiene given in the Soldier's Hand Book.

4. For the prevention of disease in fixed camps we have seen that a considerable equipment of sanitary apparatus is necessary. To insure the purity of the water, sterilizers and water carts are required. For the disposal of wastes, the trough and excavator system, or some system of incineration; also urine tubs and disinfectants and garbage cans. These, and especially the water sterilizing apparatus, will require capable and responsible non-commissioned officers in charge, and for the excreta disposal, hired scavengers under intelligent supervision. What department shall be charged with this service? Shall it be the Quartermaster's Department,—that overloaded Atlas which already staggers under a world of heterogeneous and crushing responsibilities,—transport, construction, clothing, equipment, supplies, and all the odd jobs of the army? Or shall the administration of sanitary affairs be given to the sanitary experts of the army, and placed under the Medical Department? The duty of scavenger to the Army is not an attractive one, and the Quartermaster's Department will probably give it up with a pleasure commensurate with the reluctance with which the Medical Department will assume it. But the latter has at hand the trained non-commissioned officers and intelligent personnel which could supervise the work and be placed over the hired civilians who would perform the manual labor of the camp service. There is besides less chance for friction if everything is in the hands of one department, than if it is divided between two. In each regiment a medical officer should be detailed as sanitary officer. He should select the location of the sinks and supervise their construction. He would also look up the water supply on making camp and see to the posting of the water guard, which should be one of the regular guard details. The sterilization of water and its distribution would be under him. When regiments are brigaded and the regimental hospital becomes a dispensary merely, the Hospital Corps detachment is more than sufficient for its service and a sergeant and two or three men can be readily spared to consti-

tute the sanitary squad. To these may be added such hired laborers as may be needed, who, though employed by the Quartermaster's Department, would be under the sanitary officer. As medical officers are never too abundant, it would be well for large regiments of 1,200 men to be assigned a fourth medical officer, especially for this work. The brigade surgeon would supervise the sanitary service of the brigade, and would have an assistant to be in charge of the sanitary squad at headquarters, and see to the details of the brigade service. For the Division, the medical inspector would be at the head of the sanitary service, and connected with his office would be the field laboratory, where blood tests, examinations of water, etc. for the division would be made.

CONCLUSIONS.

The tendency of modern civilization being to shield men from the infectious diseases in early life, they are now more susceptible to them than formerly, when collected into armies.

The two infections most to be feared in our Army in time of war are typhoid fever and bacillary dysentery.

These always appear but are not formidable to moving commands unless these occupy foul camp sites or drink infected water. In fixed camps they are always to be dreaded and the following precautions must be taken: The water supply, if not above suspicion, must be sterilized. The excreta must be destroyed or sterilized at once by the use of the Reed trough and excavator, or some form of incineratory. Urine tubs must be placed in the company streets at night, and fouling of the camp site by this secretion prevented.

The pollution of the camp in other ways must be prevented. Tents must be moved every week. Kitchens should be on the opposite flank of the company from the sinks. No camp should be occupied more than a month if possible to move it.

Volunteer troops, when mustered in, should be given a careful physical examination.

In order to carry out sanitary rules for the prevention of

disease in the Army we must have the following machinery:

1. An adequate and well-trained medical personnel.
2. A system of instruction in hygiene for line officers.
3. Instruction of enlisted men by their officers in the elements of personal hygiene.

4. The establishment in the Army of a service of camp sanitation to be administered, preferably by the Medical Department. A division sanitary inspector to be at the head of this service.

APPENDIX.

TABLE V.

TABLE SHOWING COMPARATIVE LOSSES OF FRENCH AND BRITISH IN THE CRIMEAN WAR, AND OF THE UNITED STATES TROOPS IN THE MEXICAN WAR. ASSISTANT SURGEON R. H. COOLIDGE, U.S.A.—VITAL STATISTICS OF WAR, 1858.

Army.	Aggregate force.	Months in service.	Total died.	Loss p. ct.		Total invalided.	Loss p. ct.		Total loss.	Loss p. ct.	
				Total.	Annual.		Total.	Annual.		Total.	Annual.
French	309,268	25	62,492	20.20	9.72	65,069	21.04	10.08	127,561	41.24	19.80
British	111,313	25	21,097	18.95	9.12	16,308	14.65	6.96	37,405	33.60	16.08
United States											
Regulars	15,736	26	3,554	22.58	10.44	2,155	13.69	6.24	5,709	36.27	16.68
Additional force	11,186	15	2,264	20.23	16.20	881	7.87	6.24	3,145	28.10	22.44
Volunt'rs and											
and Volun-											
teer Staff	73,532	10	7,087	9.62	11.54	9,216	12.53	15.03	16,294	22.15	26.57
Total U.S. Army	100,454		12,893	12.83		12,252	12.19		25,148	25.02	

The losses in battle were:

War.	Army.	Months in Service.	Percentage of loss in Battle.
Crimean	French.....	25	2.43
"	British.....	25	4.87
Mexican	United States, Regulars.....	26	5.03
"	United States Additional Forces.....	15	1.27
"	United States Volunteers.....	10	.83

TABLE VI.

SPECIAL DISEASES, RATIOS PER 1,000 MEAN STRENGTH, U. S. ARMY,
CIVIL WAR, 1861-1865.

		Year end- ing June 30, 1862.	Year end- ing June 30, 1863.	Year end- ing June 30, 1864.	Year end- ing June 30, 1865.
Typhoid Fever,	{ Admission	120.75	90.36	35.25	39.87
	{ Discharge and Death.	21.67	19.78	9.19	12.76
Malaria,	{ Admission,	404.04	460.14	584.09	558.44
	{ Discharge and Death.	3.31	4.70	3.65	4.01
Diarrhoea and Dysentery,	{ Admission	769.79	849.51	638.56	686.00
	{ Discharge and Death.	7.83	31.74	23.62	28.48
Measles,	{ Admission,	77.58	28.59	28.07	17.07
	{ Discharge and Death.	2.32	2.19	2.07	1.91
Venereal Diseases	{ Admission,	85.16	66.65	92.14	80.29
	{ Discharge and Death.	1.85	1.64	.72	.61
Rheumatism,	{ Admission,	159.93	151.89	83.84	97.58
	{ Discharge and Death.	13.01	8.95	2.53	2.04
Bronchitis,	{ Admission,	107.57	114.67	74.59	73.24
	{ Discharge and Death.	3.37	3.63	1.31	1.35
Inflammation of the Lungs,	{ Admission,	39.57	34.32	25.98	20.25
	{ Discharge and Death.	8.61	8.77	6.71	6.37
Total of above Diseases,	{ Admission,	1764.38	1796.12	1562.53	1572.75
	{ Discharge and Death.	61.98	81.39	49.80	57.53
Total for all Diseases.	{ Admission,	2982.81	2696.33	2209.78	2273.11
	{ Discharge and Death.	146.53	208.89	96.80	100.09

THE BRITISH ADMIRALTY AND THE ASSOCIATION.

A LETTER to the Editor of the JOURNAL from Secretary Root gives the following interesting information:

"The British Ambassador at this capital has requested me to convey to the Association of Military Surgeons of the United States the thanks of the Lords Commissioners of the British Admiralty for the courtesies shown to Fleet Surgeon Thomas at the recent meeting of the Association at Detroit, and to express their appreciation of the numerous facilities afforded him.

Original Memoirs.

AUTHORS ALONE ARE RESPONSIBLE FOR THE OPINIONS
EXPRESSED IN THEIR CONTRIBUTIONS.

PROPOSED REGIMENTAL MEDICAL SUPPLY TABLE FOR THE NATIONAL GUARD.

By CAPTAIN SAMUEL CECIL STANTON,
CHICAGO, ILL.

ASSISTANT SURGEON IN THE ILLINOIS NATIONAL GUARD, ASSIGN-
ED TO THE FIRST INFANTRY; LATE ACTING ASSISTANT
SURGEON IN THE UNITED STATES ARMY.

THE lack of a standard medical supply table for the national guard has been one of the serious drawbacks which the medical department has experienced. The medical supply table of the Army is so extended that it cannot be made practicable for the use of the National Guard whose services are not continuous but spasmodic. In addition the tours of duty of the National Guard are usually of short duration and are ordinarily in localities where medical supplies may easily be obtained.

With the idea of obviating this difficulty and of suggesting a list of medical supplies for the national guard, the writer was appointed as chairman of a committee of the Illinois Association of Military Surgeons to formulate such a table and to report at the next meeting of the Association. The idea of Surgeon General Senn, who appointed the Committee, was that this report, if satisfactory, should be recommended to the national guards of the various states for adoption. The committee has accordingly prepared the following list of fifty-four medicines which it believes contains all the medical supplies absolutely essential for an ordinary tour of duty of a regiment of the national guard. It will be noticed that we have not included a number of articles for

which requisitions are frequently made by medical officers of the guard such as antikamnia, listerine, Pond's extract and other proprietary or semi-proprietary articles.

No quantities are specified, as it is intended that the state shall keep these supplies in store, and that requisitions shall be made from day to day as occasion may demand.

This medical supply table on the recommendation of the Surgeon General of Illinois has been adopted as the official medical supply table for the use of the Illinois National Guard and the Naval Reserve, vide, General Orders No. 12, State of Illinois, Adjutant General's office, Springfield, Ill., July 5, 1905.

Acetanilidum comp.....	tablets.....	grains v
Acidum boricum.....	powder.....	
Acidum boro-salicylicum.....	powder.....	} Ac. salicyl 1 } Ac. boric 4
Acidum salicylicum.....	powder.....	
Alcoholis.....		
Alumen.....	crystals.....	
Ammonii bromidum.....		
Ammonii chloridi trochisci.....	tablets.....	grains v
Ammonii spiritus arom.....		
Amyl nitris.....	pearls.....	M v
Argenti nitras fusus.....		
Argyrol.....	powder.....	
Bismuthi subgallas.....	tablets.....	grains v
Benzoini tinctura comp.....		
Chloroformum.....		
Cupri arsenis.....	tablets.....	grains $\frac{1}{200}$
Grindelia robusta.....	fl. ext.....	
Hydrargyri chloridum corr. { cum Ammonii chlorido {	tablets,* antiseptic.....	
Hydrargyri chloridum mite.....	tablets.....	grain $\frac{1}{2}$
Iodum.....		
Ipecacuanhæ et opii.....	tablets.....	grains v
Linimentum rubefaciens.....	tablets.....	grains xii
Magnesiae sulphas.....		
Morphinæ sulphas.....	tablets.....	grain $\frac{1}{4}$
Nitro-glycerinum.....	tablets.....	grain $\frac{1}{100}$
Oleum ricini.....		
Peptonizing tablets.....		grains x
Petrolatum spissum.....		
Pilulae aloini comp.....	{ Aloinum, Podophylli resina, Belladonna fol.ext.alc. Strychnina et Ol. resina Capsici.	

Pilulæ carminativæ.....	{ Morphinæ sulphas, camphora, ext. rhei, sodii car-	
	{ bonas exsic, ol. res. Capsici et oleum menthæ pip.	
Pilulæ catharticæ comp.....		
Potassii iodidum.....		
Potassii permanganas.....		
Quininæ bisulphas.....	tablets.....	grains ii
Quininæ sulphas.....	tablets.....	grains iii
Sinapis emplastrum.....		
Sodii bicarbonas.....	tablets.....	grain i
Sodii salicylas.....	tablets.....	grains v
Strychninæ sulphas.....	tablets.....	grains $\frac{1}{10}$
Sulphonal.....	tablets.....	grains v
Salol.....	tablets.....	grains v
Terebinthinæ oleum.....		
Ung. gallæ comp.....		
Zinci oxidum.....	powder.....	

HYPODERMIC TABLETS.

Apomorphinæ hydrochloras.....	grain $\frac{1}{10}$
Atropinæ sulphas.....	grain $\frac{1}{100}$
Digitalinum.....	grain $\frac{1}{80}$
Hyoscine hydrobromas.....	grain $\frac{1}{150}$
Morphinæ et atropinæ sulphas.....	grain $\frac{1}{4}$ et $\frac{1}{150}$
Nitro-glycerinum.....	grain $\frac{1}{100}$
Quininæ hydrochlorosulphas.....	grain $\frac{1}{2}$
Strychninæ nitras.....	grain $\frac{1}{80}$
Cocainæ hydrochloras.....	grain $\frac{1}{8}$

NOTE. For antiseptic purposes and especially as a streptococcide a one per cent solution of Iodine and Potassium Iodide is to be employed.

It is earnestly hoped that this or a similar table may be adopted as a standard for the national guard regiments of the United States.

DISCUSSION.

MAJOR GEORGE H. HALBERSTADT, N.G. Pa.—We have found it an absolute necessity in Pennsylvania for each regiment to be provided with a quart of castor oil. The men come from the shops and stores and go into camp, where they become either constipated or have diarrhoea on account of their ravenous appetites. I have always had trouble in getting the castor oil from the Surgeon General.

CAPTAIN STANTON.—Castor oil was one of the articles mentioned in my paper.

COLONEL J. K. WEAVER, N.G. Pa.—I approve very much of the idea of a new supply list for the national guard. In Pennsylvania we devised a medical case and put in just such articles as we would likely need. We

provide those things only that are likely to be used in an encampment of a week's time. The Illinois list compares very favorably with our own. Castor oil is essential. Our supply case was small and we wanted to do away with liquids, and I substituted sulphate of soda, which I think is very valuable, and also sulphate of magnesia, so as to avoid liquids. We have put back castor oil as there was a great demand for it. I think we ought to fill our supply list with those things we actually need.

MAJOR JAMES EVELYN PILCHER, U.S.V.—Having served during the Spanish-American War as Medical Supply Officer of a Corps of 30,000 men, I may speak with some feeling and considerable practical knowledge when I start out upon the postulate that *there should be no medical supply table for the national guard*. It is their business as citizen soldiers to prepare, as far as possible for actual service. When they go into the field, they should go upon the plan and under the rules provided by the War Department for furnishing supplies. During my service as Medical Supply Officer many demands were made by my volunteer friends, who were excellent doctors, for accessory drugs which they had found useful in their private practice,—demands always difficult and sometimes impossible to meet. In a large body of men, it is necessary that there should be uniformity and this is the reason for the construction of a Supply Table. It is desirable that the medical officer should know how to use what he has on hand. The medical officer of the army must learn to use the tools furnished him, and as the object of the national militia is to train a body of men for service with the national army in case of need, the national guard medical officer should learn to use the field medical equipment of the army. It is impossible in the field for men to gratify their varying tastes. My distinguished colleague says that the army chests contain much that the medical officer of the national guard will not need during a week's encampment. That is not a serious objection to the army chest. One of the most important features of successful medical administration is to be prepared for every emergency, consequently, I am in favor of the full medical supply table of the regular army. And for these reasons I oppose the provision of a separate supply table for the national guard. The national guard should learn to use the tools provided by the national government for the army in order that they may be *semper paratus* for any possible emergency [Applause].

MAJOR THOMAS E. CARMODY, Colo. N.G.—In Colorado we found what Major Pilcher has said to be true. Before our service was over, we found we could get along with what we had in the regular army supplies.

MAJOR HOMER I. JONES, Ind. N.G.—In Indiana we try to do as they do in the Army. When we go to our ten days camp, we have the regular supply table of the Army, and we cut out all fads and fancies. We have the regulation chest of the army and are not allowed to use or have anything else. I don't believe in having a special list for the national guard separate from the army list.

MAJOR THOMAS C. CLARK, Minn. N.G.—I do not think in the Army chest enough regard is paid to the relative quantities of drugs used in the

service. One drug is used up in a short time, while another one may not be touched. I want to endorse Major Halberstadt in regard to castor oil. You might eliminate a very large part of everything else if you have a large quantity of castor oil.

CAPTAIN JAMES B. HUNGATE, Neb. N.G.—I want to endorse what Major Pilcher has said. In Nebraska we tried monkeying with a supply table, but we have stopped that and have a regular medical and surgical chest, and we get along nicely without anything else. We have no castor oil, but we have sulphate of magnesia in the detached service chest. We administer the stuff to the man right then and there and see that he swallows it or else we are likely to find it in the latrines, without having passed through the body.

COLONEL J. K. WEAVER, N.G. Pa.—Practically we have no sickness in our week's encampment, and if we were to adopt the army outfit, few if any of the drugs would be used, with the result that the drugs would deteriorate. I oppose it also because it is a needless expense for the national guard. I am still of the opinion that we should not adopt the army supply list. We are all general practitioners and are familiar with therapeutics. A supply list for each guard is the correct idea.

THE SANITARY DUTIES OF A POST SURGEON.

IN connection with other emendations of the American Army Regulations, the section (Par. 1414) with regard to the sanitary duties of surgeons of military posts has been revised, so that it now reads as follows:

"The surgeon, under the direction of the commanding officer, will supervise the hygiene of the post or command, and recommend such measures as he may deem necessary to prevent or diminish disease. He will examine, at least once a month, and note in the medical history of the post, the sanitary condition of all public buildings, the drainage, the sewerage, amount and quality of the water supply, the clothing and habits of the men, and character and cooking of the food, and immediately after such examination will report thereon in writing to the commanding officer, with such recommendations as he may deem proper. The commanding officer will return the report, with his views and action indorsed thereon, and if he deem the action recommended impracticable or undesirable, will state fully his objections. The indorsement will be recorded in the medical history of the post, and the report and indorsement will be forwarded by the surgeon, through military channels, to the Surgeon General. Special sanitary reports will take the same course as the regular monthly sanitary reports. As far as practicable, intermediate commanders will correct sanitary defects, noting their action by indorsement."

This section is published in full for the information of those members of the Association and others who have not access to the current Army Orders.

REMARKS ON STRETCHERS USED ON WARSHIPS.

BY SHIGEMICHI SUZUKI, F.R.C.S.,

SURGEON GENERAL IN THE IMPERIAL JAPANESE NAVY.

WE know the stretchers hitherto in use in different navies were made with various devices but we always find some disadvantages whilst there are many advantages in them, so that no single stretcher used by various navies comes to ideal perfection. The stretchers we use at present were made after several alterations with various devices, taking into consideration those of our army as well as other navies.

At the beginning of the present naval war we thought our stretchers would give us a good result. Notwithstanding, when we came to use them in actual engagements we found various inconveniences in spite of our idea.

The stretchers now in use in our navy are the same in principle as those used in other navies; i. e. canvas is used to support the wounded body whilst two horizontal iron bars are on both ends of the canvas to stretch out two bamboo bars which are passed through short circular tubes on each end of the iron bars and fold on each side of the canvas.

Several holes are made in the canvas sheet through which a long cotton sash is to be passed in order to fix the wounded man with it. Also there are two canvas shoulder slings with a loop on each end which is to be passed to each end of the bamboo rods when a wounded man is carried.

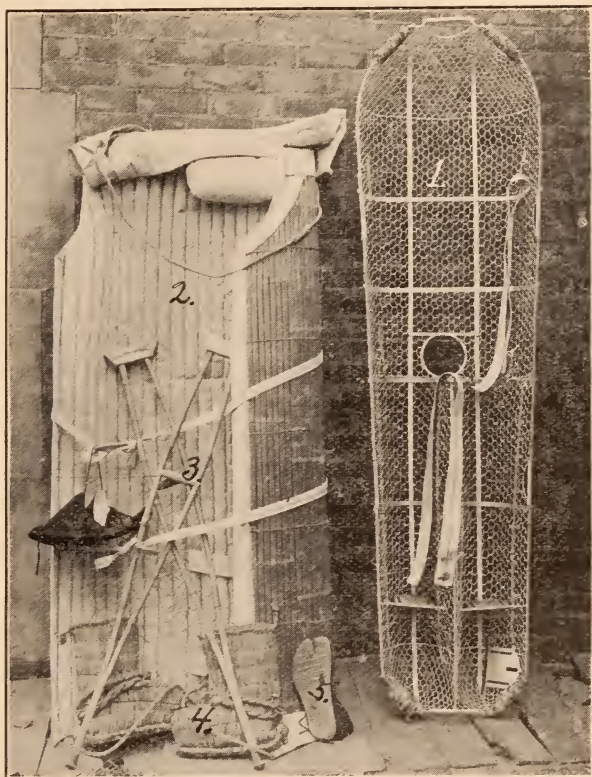
There is also a waterproof cotton covering to keep off rain splash and sun rays and, to support it, two thin steel ribbons easily curvable to an arch are fixed to the tubes of the horizontal iron bars.

When the stretchers are not in use the horizontal iron bars are taken off from the bamboo rods and the covering as well as the thin steel ribbons are enclosed in the canvas sheet which is

ties up by the two shoulder slings. Before we adopted this form of stretcher several trials were made on shore, and on board men-of-war under anchor as well as while cruising, and they were reported to be fit under various situations such as on the decks, and in the boiler and engine rooms as well as on the tops and bridges; after these trials with good reports we decided to use them generally in our navy. But when we came to use them in actual fighting we found that they were not so fit as they were reported on trials, that is to say the shoulder slings passed on bamboo rods are easily slipped out during heat of fighting and precious moments are spent to look after them, otherwise an ambulance party is often obliged to carry wounded men without the shoulder slings. Also when wounded men are on the stretcher, they are to be fixed with the cotton sash passed through the holes in the canvas as many times as is wanted, so that many wounded men were often brought down to the temporary surgery without fixing them completely; then we thought the old way of fixing up with canvas bands and buckles was a much simpler and quicker method. Again the horizontal iron bars are furnished with screw arrangements on each end so as to fix them tightly on the bamboo rods but when the stretchers are carried on steep ladders the lowermost bar is liable to slip down carrying with it the canvas sheet on which the wounded man is supported; in this way a considerable burden was brought upon the carrier on the lower end. Thus inconvenienced we had to resort to tying up these horizontal bars with small strings so as to fix them up to the bamboo rods; also the shoulder slings were tied up to the rods; by these means we hardly obviated above mentioned disadvantages.

Bamboo rods for use on board the men-of-war the shorter the length the better, whilst those for the landing party must be proper length; therefore those rods for the use on ship board can not be used for a landing party. In a landing party if a part of stretchers be broken, repairs are not so easy a matter as on board. Reports of the surgeons belonging to the landing party for the reinforcement of the army on the attack of Port Arthur tell us that stretchers for use on shore must be as simple and strong as possible whilst their weight would be as light as possi-

ble; also supports of a few inches height are necessary so as to keep off stretchers from the ground when carriers are taking rest; this is especially so when the ground is moist. Again bamboo of second quality is liable to break so that strong tenacious wooden rods are desirable instead of bamboo rods. The above statements are perhaps not so essential, but for a landing party they are all important points to be considered. From what I have told you now, you will see that one definite form of stretcher for all purposes in naval service is far from being attainable, therefore



The Totsuka Litter and other Japanese Sanitary Devices.

Courtesy of the Detroit Medical Journal. Photo by Mr. J. F. Hartz.

1. A Stokes splint stretcher, included in order to show the relative proportion of the Japanese articles.
2. The Totsuka stretcher made of split bamboo rods held together by a strong cover and well padded on the inside so that the injured man can be transported without danger and with comfort.
3. Crutches ingeniously constructed of bamboo rods, with an arm piece of especially light wood, the whole weighing about one-half as much as American-made crutches.
4. Shoes used by Japanese seamen in cold weather, and particularly designed for men on torpedo boats and submarines, who experience great difficulty in keeping their feet warm under water.
5. Rubber soled cloth shoes made with cloven sole to facilitate climbing.

all purposes in naval service is far from being attainable, therefore

think at least three forms of stretcher are necessary, otherwise one form which is easily transferable to another one is necessary; i. e., (1) one for the use on the decks in horizontal plane, (2) one for the tops, bridges, engine rooms in vertical line, (3) one on shore for a landing party. Some may object to having so many stretchers on board the men-of-war, as they occupy so much space, but I consider modern war-ships are quite different from that of older period, the height between decks are sufficient enough to allow stretchers to be stored up a roof. If there may be any insufficiency of space on smaller vessels why should we not substitute for all drugs hitherto supplied by bottles and boxes into smaller and compact form of tabloids by which I have no doubt half of the drug store may be utilized to store off stretchers. I am a strong advocate to use tabloids for the supply of warships, I have already brought to point that certain drugs are supplied in tabloids.

The stretchers used in our navy were made to suit above mentioned three occasions by one form, but after using them in actual engagements we could not get what we wished, therefore I rather incline to think to provide three distinct forms for each purpose is better than one form for all purposes.

Here I brought from home a stretcher which is made with bamboo and canvas, devised by my colleague, Surgeon General Totsuka. This stretcher is simple and easy to use, so we made a large number of this form during the war and supplied them to the fleets; they found them useful especially on sea when wounded men on destroyers and torpedo boats have to be transferred to larger ships or wounded men from the bridges or engine room to be carried away.

DISCUSSION.

MEDICAL DIRECTOR JOHN C. WISE, U.S.N.—General Suzuki said that in the transfer of his patients they had a special hammock for the sick. I would like to ask him if they had any litter or other method devised for transportation.

General Suzuki then described an ordinary cot.

DANGER FROM TYPHOID URINE IN MILITARY CAMPS

By CAPTAIN CHARLES S. BUTLER,

ASSISTANT SURGEON IN THE MASSACHUSETTS VOLUNTEER MILITIA

MUCH has been done, within the past few years, on the bacteriology of urine in infectious diseases. Perhaps the one fact of clinical value, so worked out, to military surgeons, has been the presence of typhoid bacilli in the urine of patients ill with this disease. Yet much of the recent literature dealing with outbreaks and epidemics of enteric or typhoid fever, particularly in the military field, has put stress more on the danger of spreading the disease by *fecal contamination*. This emphasis, it seems to me has led away from another important cause. I do not overlook the grave dangers of soil pollution by typhoid feces; but rather wish to call attention to the still greater necessity of remembering and treating the hidden danger in the urine.

In the recently published "Report on the Origin and Spread of Typhoid Fever in the Spanish War of 1898" the conclusions and suggestions there expressed serve to point an evident and practical moral; that prevention of disease is most important, particularly in dealing with typhoid among armies. The bacilli, in cases of this disease, have been found in the fecal discharges, in the sputum, in the rose spots, and in the urine, not to mention the tissues and organs of the body away from the surface. It is necessary, therefore, to recognize the proportion of all cases of enteric fever in which the urine itself is infected. This is now well established. The published work of Horton-Smith, of Richardson, of Petruschky, of Neufeld, and others, all show that in from twenty-one to twenty-five per cent or even twenty-eight per cent of all cases of urine examined, the typhoid bacilli were found. These results, too, are based on several thousand cases; and give a percentage which is, without question, larger than previously assumed.

This fact having been proved, the question at once arises,—is not the infected urine as important a cause as feces in the spread of enteric in military camps; in fact, may not the infected urine be a more potent factor than any other?

The following considerations, in brief, it seems to me, lend support to an affirmative answer, as well as give us a rational method of combating this danger. In the first place, the typhoid bacilli are found in the fecal discharges as early as the first and second weeks of the disease; this is an important link in the chain of dissemination. In the second place, however, it is difficult to find or isolate the bacilli from the stools after the middle of the third week. The bacilli may be present late in the disease; but if so, are *few* in numbers, and are killed or masked by the growth of colon bacilli and other bacteria. Thirdly, in at least twenty-one per cent and more probably twenty-five per cent of all cases of the fever (so far examined), the bacilli are present in the urine; frequently in enormous numbers; even in pure culture. Fourthly, our former conclusion that typhoid bacilli appear in the urine *late* in the disease, must give place to the belief that they appear in the urine as early as the second week; this being somewhat *earlier* than was at first thought. This conclusion, it seems, puts the urine almost on an equality in time with the feces in infectivity. Fifthly, in cases where the bacilli are found in the urine, they may be present even without symptoms, for weeks after convalescence, even for months, as reported, after such typhoid patients have left the hospital. It is these ambulatory cases which are continual sources of infection for spreading enteric in permanent military stations and camps. With the foregoing facts acknowledged, it is clear that some effective method should be adopted of treating *all* cases of typhoid fever, to eliminate permanently the bacilli from the urine.

These considerations are cumulative; they point a clear moral; to treat the disease not only with the object of saving the life of the patient, but also of preventing him from being the cause of other outbreaks so far as possible. An English surgeon gives it as his opinion that in India much of the widespread enteric fever is due to the promiscuous urination of natives, convalescent from

the disease; but without disinfection of their urine. And it seems probable that a like cause was to blame in our own country in the Spanish-American war.

As for the treatment to be carried out to combat this danger in typhoid bacilluria, several methods have been tried. First, disinfection of the urine after it has been passed, by carbolic acid or other chemicals as long as the patient remains under observation. Second, washing out the bladder with an antiseptic such as corrosive sublimate 1-20,000 to 50,000. Third, the administration by mouth of urinary antiseptics, such as sodium benzoate, salol, and formaldehyde derivatives. Of these three methods, I shall dismiss as impractical in field and base hospitals, or in epidemics, except in selected and unusual cases, the first and second methods as above mentioned. They do not strike at the source of the danger, they also fail in not providing for treatment after patients leave the hospital; they are impossible to carry out completely with large numbers of patients and a small medical force. Yet the method of disinfecting the urine after it is passed is a necessary link in the chain of prevention, but it should be done systematically and intelligently. Irrigation of the bladder in cystitis, also, gives relief to the patient.

There remains, then, for consideration the method of treatment by the administration by mouth, of urinary antiseptics, a method recommended by Nicolaier, by Horton-Smith, by Richardson, and others. This is probably the most effective method when the formaldehyde derivatives are used. The drugs known under different names as "formin," "urotropin," "cystogen," and "hexamethylenetetramine" given internally have proved the means of sterilizing the urine under many conditions, not the least of which is the bacilluria of typhoid. For some time, the use of these drugs in one form or another, was begun *late* in the disease in selected cases; and continued only till convalescence was well established. Now, however, Fuchs has reported a series of forty cases treated from *early* with urotropin, but with only one case having typhoid bacilluria. Easton, of Boston, has reported lately a series of forty-six cases treated with urotropin, 5 gr., t.i.d., *throughout the disease*; and, in these not a case

of bacilluria (and no bad symptoms). The point then, I wish to emphasize to military surgeons is the importance, the efficiency of the use of such routine treatment, in removing the great danger of typhoid bacilli in urine. It is rare, even under the continued use of the drug, that any bad symptoms develop; painful urination, temporary hematuria cease if the drug be omitted.

The following conclusions seem justified. In the past we have paid much attention to disinfection of the feces in typhoid fever; in the future we should pay even more to disinfection of the urine; both throughout the disease and in all cases even after convalescence, if necessary. The simplest, and at the same time the most effective treatment, so far found, is the use of urinary antiseptics of the formaldehyde group of drugs, given by mouth. In this way a large element of danger in the spread of typhoid or enteric fever among armies can be effectively abolished.

AN EMERGENCY FIELD SERVICE TOURNIQUET.

By LIEUTENANT HAYWOOD S. HANSELL,

ASSISTANT SURGEON IN THE UNITED STATES ARMY.

ALL persons in the military service should note the value of the campaign hat cord as an improvised tourniquet. Its tensile strength is sufficient to withstand any pull that might be made on it for this purpose.

It is in the shape of a double circle, giving it a sufficiently broad applied surface, when put on over a sleeve or breeches leg. It is always present in convenient shape.

The sliding knot which is applied over the artery, gives an increased pressure at that point.

It can be applied by the man himself by holding an end in each hand, and pulling, or to an upper extremity by holding one end in his mouth.

Having obtained a sufficient degree of constriction, any slipping is prevented by a simple knot over the sliding knot.

It is also valuable in fixing splints to an injured limb.

The hat cord is of little service to the soldier; hence the value of giving it a practical use in first aid treatment.

Contemporary Comment.

A ROENTGEN RAY APPARATUS FOR WAR PURPOSES.

By DR. W. OTTO.

TRANSLATED BY CAPTAIN FREDRIK KNUDSEN,
EIGHTH UNITED STATES INFANTRY.

IT is the most earnest endeavor of all civilized nations to alleviate, as much as possible, the horrors of war by giving, to the greatest extent possible, medical treatment and the most solicitous care and nursing to the wounded soldiers. The field hospitals are, for this purpose, provided with everything in the way of medical appliances and apparatus, which can only be furnished and used under the peculiar conditions presented by war. Every effort is made to press into service, also in the field, by adapting them to the changed, limited and cramped conditions, all the achievements of science, as of technics, which are resorted to at home in the clinic, in the occupation of the surgeon and the treatment of the patients, for curing the wounded warrior.

It is, however, self-evident that, in war, the surgeon is often compelled to do without many expedients, whose use would often be the downright saving of life. But there are too many difficulties which block the use and advantage of all surgical resources; war creates so much that is sudden and unforeseen, that it is utterly impossible to make one's surgical preparations even approximately.

In the last years a surgical expedient of a physical nature has conquered the whole medical world, created quite new prospects for the diagnostic art and has rendered valuable service as a remedy for a large number of determined forms of disease. I mean the Roentgen rays.

*Translated under the direction of the Military Information Division of the United States Army General Staff from the *Kriegstechnische Zeitschrift*, 1904.

As at present a hospital can no longer be imagined without a Roentgen apparatus, as the practical surgeon already consults in his private practice, in his own office, Roentgen rays for diagnosing numerous cases of sickness, it is of the greatest value in case of war, when a Roentgen apparatus is at the disposal of the surgeon.

The opportunity to use Roentgen rays with invaluable results presents itself nowhere more often than in the field; they do indeed give the best and most reliable information concerning the condition of the wound, the kind of injury to the bones and the seat of the projectile; here they urge speedy action, a quick operation; there a nursing treatment. They are a trustworthy adviser just for the "conservative" surgeon.

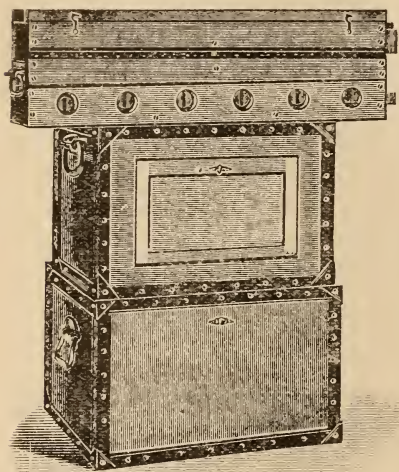


Fig. 1. Roentgen Ray Apparatus Packed for Transportation.

It has already long been ardently desired to be able to utilize, also in the field, the excellent diagnostic assistance, which the Roentgen rays give in the treatment of wounded. A whole series of new results must however be expected from their use in the medical profession. But however great the difficulty must be to realize this wish and produce a Roentgen apparatus really useful for war purposes, satisfying completely the requirements, everybody, who has occupied himself with Roentgenography, is capable of judging. A Roentgen apparatus is, even under the safe conditions at home, a very delicate mechanism, which is not only very bulky, but whose construction must be carried out in the most careful manner.

It will, therefore, be of two-fold interest to everybody to become acquainted with a Roentgen apparatus, which is constructed expressly for war purposes and possesses besides a completely

satisfactory power, both as regards good results of light penetration on the screen and production of clear pictures on the photographic plate.

Our illustrations show one of the military Roentgen apparatus, with which the electrical company "Sanitas" in Berlin, that we already have to thank for different innovations in Roentgen instruments, has provided the Russian hospitals for the present Russo-Japanese war.

As Fig. 1 shows, the whole apparatus is placed in three strong, iron-bound wooden chests with handles; the chests are so strongly made and their interior is so well arranged for receiving the different parts of the instrument,

that damage to the apparatus or the breaking of the single parts is completely prevented.

In the top chest is placed the accumulating battery, consisting of six cells, whose jars are made of celluloid. Its capacity amounts to sixty amperes.

In Fig. 2 we see the middle chest open before us. The front

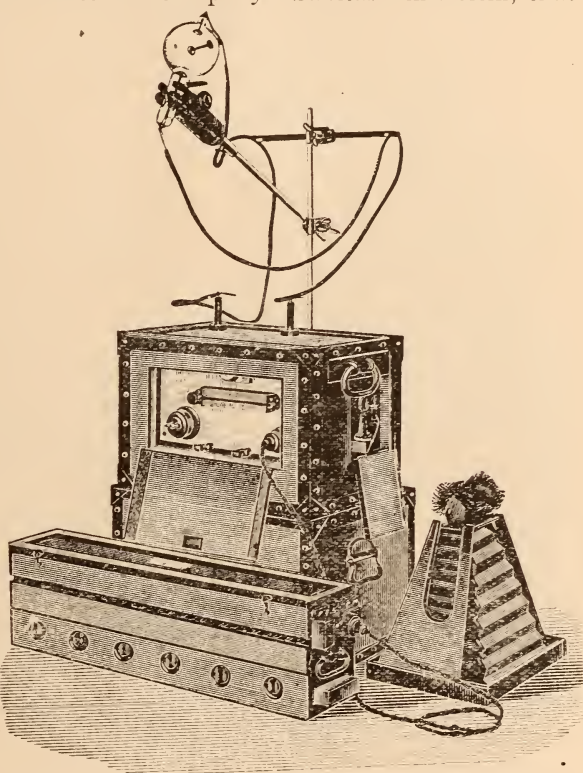


Fig. 2. Roentgen Ray Apparatus for Military Service.

part of the chest is let down, and thus becomes visible the switch-board with the whole switch apparatus. The storage battery is, as shown in Fig. 2, connected with the board by means of the conducting wires. The spark inductor is situated behind the switchboard in the interior of the chest, while the disjuncter apparatus is situated on the right side of the chest, (as viewed by the onlooker), and is accessible from the outside after opening a lid, for the purpose of determining the number of interruptions.

On the cover of the chest is seen erected the stand carrying the Roentgen tube and the wires leading from it to the inductor. The binding posts of the inductor are visible on the cover. Beside the chest stands the cryptoscope which covers the screen.

The stand can be taken apart and is kept, as Fig. 3 shows,

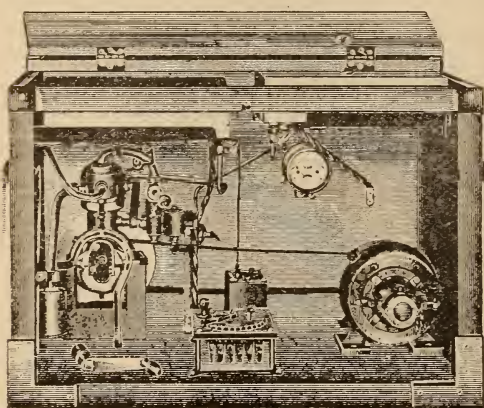


Fig. 3. Charging Apparatus for the Storage Battery.

under the cover of the bottom chest, shown in Fig. 1. The interior of this chest has two carefully padded compartments in which both the Roentgen tubes are kept, while the folding cryptoscope is placed in an adjoining compartment.

The chemicals required for the taking of photographs are packed in small tubes

and have, like the photographic plates, their place in another adjoining compartment of chest No. 3.

It is seen that everything, that belongs to a complete Roentgen apparatus, has been provided for to a nicety down to the smallest detail. Notwithstanding its compact form, notwithstanding its relative simplicity this military Roentgen apparatus is a real practical apparatus, which is capable of serving its purpose in every way.

For recharging the storage battery, a special charging apparatus is provided, which, as Figs. 4 and 5 show, is similarly placed in a strong iron-bound chest that can easily be carried by two men and consists of a dynamo and a benzine motor. The motor is similar in its construction to that used on automobiles. It is water cooled and has automatic electric ignition. A regulative resistance coil serves to regulate the tension of the dynamo to sixteen volts, which is read off on the voltmeter.

Thus the surgeon is enabled, in the field also, to sharpen and make precise his diagnosis, by the aid of the Roentgen rays, and, backed up by the picture, which they give him of the condition of the wounded limbs, to choose the right method for his surgical interference.

The care of the wounded of the battlefield is one of the most important problems of the army administration, the solution of which is, to a large extent, made easy through the progress especially in the domain of electro-technics. Only the best is good enough for the wounded soldiers.

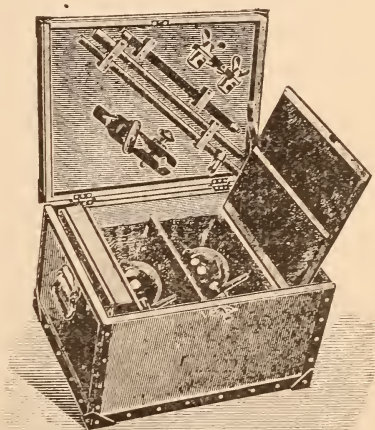


Fig. 4. Stand and Utensils for Apparatus Packed.

JAPANESE DEATH AND SICK RATE.

THE Japanese War Minister, speaking at a banquet of the representatives of the Medical Service of the Japanese Army, stated that Japan at one time during the recent hostilities had 1,200,000 under arms. Of this number, 70,000 died and 310,000 were wounded or sick, but only 15,000 died of sickness and only 9,800 died of wounds after coming under treatment.

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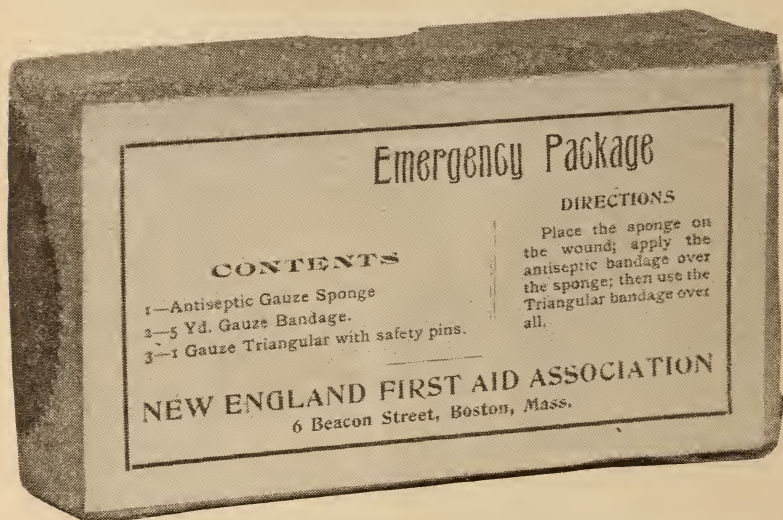
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Editorial Expression.

SOME NEW FIRST AID PACKETS.

UNDER the guidance of Captain Harry H. Hartung, M.V.M., Medical Director, the First Aid Association of America is doing some valuable work which is worthy of permanent record. Among the features which have been developed is a new first aid package in two forms. One of these is encased in a paper box, sealed at either end, as shown in the cut.



The Box Emergency Package.

The other is wrapped in cloth, with an impervious coating, similar to the regulation packet of the Army. The latter is designed for carrying upon the person, where it might become permeated with animal secretions or otherwise mutilated, while the box form is intended more for use in the home, factories and offices where it is not in danger of injury by contact with other articles.

The illustrations show the external appearance and general configuration of the packets excellently.

Of the contents however, it is worth while to mention the which has especially ional First ation, and known as age or dress- which pre- features not other form



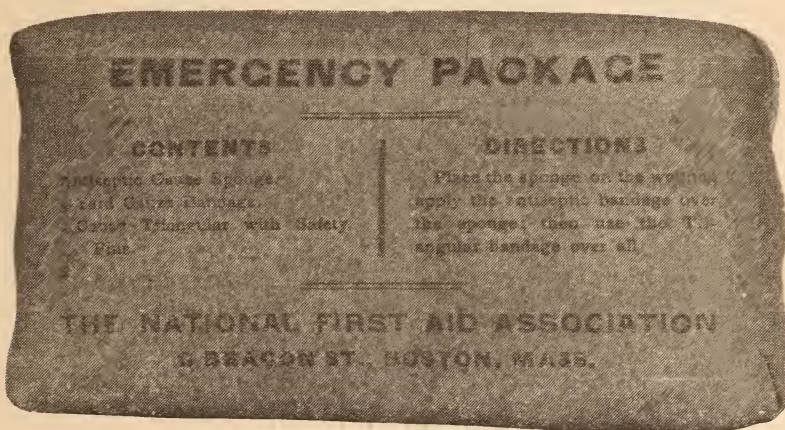
The Bandage or Dressing Pin of the National First Aid Association of America.

The tri- bandage has well worked

contains numerous suggestions, which are not found in the Es- march design commonly used, and which render it of broader ap-

particularly safety pin, been devised for the Nat- Aid Associ- which is their band- ing pin, and sends safety found in any of pin.

an g u l a r also been out and con- tains

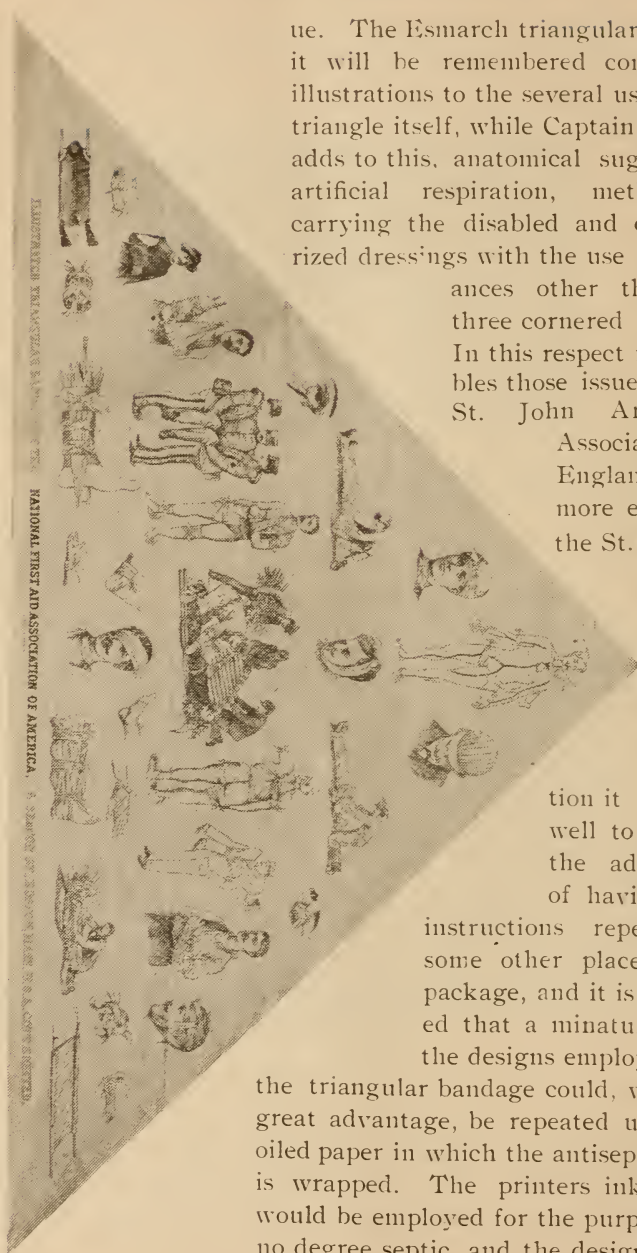


The Emergency Package with Impervious Cover.

plication than the usual form. The bandage also is of a rather better grade of material than is found in most of the packages.

The presentation, within the limits of the packet, of pictures of the more useful methods of applying first aid is of no little val-

The Triangular Bandage of the National First Aid Association of America.



ue. The Esmarch triangular bandage it will be remembered confines its illustrations to the several uses of the triangle itself, while Captain Hartung adds to this, anatomical suggestions, artificial respiration, methods of carrying the disabled and extemporized dressings with the use of appli-

ances other than the three cornered bandage.

In this respect it resembles those issued by the St. John Ambulance

Association of England and more especially the St. Andrews

Ambulance Association of Scotland

In this connection it might be

well to mention the advisability of having these

instructions repeated in some other place in the package, and it is suggested that a miniature set of the designs employed upon

the triangular bandage could, with very great advantage, be repeated upon the oiled paper in which the antiseptic gauze is wrapped. The printers ink, which would be employed for the purpose, is in no degree septic, and the designs would

be readier of reference were they so repeated. Or it might be of even greater advantage to repeat them upon the inside of the cloth wrapper of the package where they could be referred to by the person making the application, after the bandage itself were so folded as to render reference to it difficult or impossible. A very desirable arrangement in this connection would be the introduction of a set of self-help rules and illustrations, upon the plan of the celebrated charts of Staff Surgeon Diemer, upon some of the components of the packet.

A BRITISH OPINION ON THE NEW U. S. ARMY ORDER
REGARDING THE TRAINING OF THE LINE
OFFICER IN MILITARY HYGIENE.

THE American Army is indeed to be congratulated on this fresh departure in the matter of the education of its officers in the subject of sanitation and military hygiene—a striking step in progressive medicine for the prevention of disease during peace-time and war. The congratulation comes from their British friends who see nothing but a future of the greatest practical usefulness for all time and let us hope Hygeia may be reached at a not too distant date. The writer rejoices to note that this order is to have for its birthplace no less important a home than the West Point Military Academy with Deputy Surgeon General H. O. Perley to nurse it in its infancy at least; most officers are aware of the rare capabilities of that officer who so ably conducted the Hospital Ship *Relief* in the Far Eastern and Philippine waters during the troublous days of 1899-1900, in the capacity of Chief Surgeon, Navigator, and Victualling Officer. Then again we have at West Point that most capable and courteous officer General Mills now commanding the Academy and one of America's youngest and most progressive generals. With such a combination of the suaviter in modo and the fortiter in re this infant order should develop into ideal manhood and we wish it, with all sincerity, bon voyage.

London, Eng'd.

J. LL. T.

News of the Services.

Dr. George F. Adair, U.S.A., ordered from Fort Wadsworth to Fort Jay for temporary duty.

P. A. Surgeon John F. Anderson, P.H.&M.H.S., appointed Recorder of an Examining Board at Washington.

P. A. Surgeon R. A. Bachmann, U.S.N., commissioned as such from March 20, 1905.

Assistant Surgeon L. P. H. Bahrenburg, P.H.&M.H.S., ordered before the Promotion Board at Washington.

Surgeon C. E. Banks, P.H.&M.H.S., ordered from temporary duty at Century, Fla., to rejoin station at Key West.

Lieutenant Charles Norton Barney, U.S.A., ordered from the Philippines to Fort Bayard on account of the development of the symptoms of tuberculosis.

Assistant Surgeon J. L. Belknap, U.S.N., ordered from the Newport Naval Hospital to the *Brooklyn*.

P. A. Surgeon T. D. Berry, P.H.&M.H.S., ordered to Biloxi, Miss., for special temporary duty, and from Biloxi, Miss. to New Orleans for temporary duty.

Medical Inspector Henry G. Beyer, U.S.N., ordered to the *Wisconsin*.

P. A. Surgeon Rupert Blue, P.H.&M.H.S., ordered from special temporary duty at New Orleans, to rejoin station at Norfolk, Va.

Assistant Surgeon J. S. Boggess, P.H.&M.H.S., ordered before Promotion Board at Washington.

Dr. Frederick D. Branch, U.S.A., returned from Fort Jay to Fort Wood.

Captain Thomas S. Bratton, U.S.A., ordered from Chicago, Ill., to the Philippines, January 5, 1906.

Dr. John D. Brooks, U.S.A., granted one month's leave.

Assistant Surgeon J. T. Burkhalter, P.H.&M.H.S., ordered before Promotion Board at Washington.

Dr. William E. Cass, U.S.A., ordered from Vancouver Barracks to Fort Stevens for temporary duty.

Lieutenant Walter C. Chidester, U.S.A., was married in San Francisco, Wednesday, November 22, to Miss Marie Bull.

Lieutenant C. C. Collins, U.S.A., granted two months leave.

Lieutenant C. H. Connor, U.S.A., ordered from Fort Stevens to San Francisco as a court martial witness.

P. A. Surgeon G. M. Corput, P.H.&M.H.S., ordered to Pascagoula, Miss., for special temporary duty, and from Pascagoula, Miss., to temporary duty at New Orleans.

Lieutenant H. W. Cowper, U.S.A., relieved from duty in the Philippines and ordered to special duty at Washington Barracks on expiration of sick leave.

P. A. Surgeon H. S. Cumming, P.H.&M.H.S., appointed Chairman of an Examining Board at San Francisco.

Captain Wilson T. Davidson, U.S.A., promoted as such December 26, 1905.

Dr. George W. Daywalt, U.S.A., granted a month and twelve days leave from Fort St. Philip.

Assistant Surgeon B. H. Dorsey, U.S.N., ordered from the *Illinois* home to await orders.

Assistant Surgeon General J. M. Eager, P.H.&M.H.S., appointed member of an Examining Board at Washington.

Assistant Surgeon H. G. Ebert, P.H.&M.H.S., granted two months leave.

Surgeon S. G. Evans, U.S.N., ordered to the Denver Naval Recruiting Rendezvous.

Dr. William J. Enders, U.S.A., granted one month's leave.

Dr. Edward J. Farrow, U.S.A., ordered to the Philippines.

Captain Clyde S. Ford, U.S.A., ordered from Fort Barrancas to Cleveland, Ohio, on inspection duty in connection with an Army Motor Ambulance.

P. A. Surgeon E. Francis, P.H.&M.H.S., appointed Chairman of an Examining Board at Mobile.

Major Euclid B. Frick, U.S.A., ordered to accompany troops from Fort Snelling to San Francisco.

P. A. Surgeon L. D. Fricks, P.H.&M.H.S., granted one month's leave, and ordered to Ellis Island, N. Y.

P. A. Surgeon C. H. Gardner, P.H.&M.H.S., granted one month's extension of leave.

Surgeon J. M. Gassaway, P.H.&M.H.S., reassigned to duty at St. Louis, Mo.

Lieutenant H. C. Gibner, U.S.A., married at Wawano, Cal., November 30, 1905, to Miss Charlotte E. Bruce.

Surgeon G. M. Guiteras, P.H.&M.H.S., ordered to Memphis, Tenn. for special temporary duty.

Surgeon J. A. Guthrie, U.S.N., granted three months' sick leave.

Lieutenant John W. Hanner, U.S.A., granted three months leave with permission to return from the Philippines via Europe.

A. A. Surgeon G. G. Hart, U.S.N., ordered from the *Glacier* to the Buffalo Naval Recruiting Station.

Colonel Valery Havard, U.S.A., ordered to accompany Department Commander on inspection tour.

Dr. John R. Hereford, U.S.A., granted a month's extension of leave.

Assistant Surgeon J. H. Holloway, U.S.N., ordered to the Norfolk Navy Yard.

P. A. Surgeon J. M. Holt, P.H.&M.H.S., appointed Recorder of an Examining Board at San Francisco.

A. A. Surgeon Lea Hume, P.H.&M.H.S., granted one month's leave.

Surgeon E. O. Huntington, U.S.N., ordered for treatment at the Brooklyn Naval Hospital.

Lieutenant Paul C. Hutton, U.S.A., ordered before the Presidio Promotion Board.

Surgeon P. C. Kalloch, P.H.&M.H.S., authorized to attend the meeting of the Maine State Board of Health.

Lieutenant C. E. Koerper, U.S.A., ordered to temporary duty at Washington Barracks, and later relieved therefrom.

P. A. Surgeon J. W. Kerr, P.H.&M.H.S., ordered from Quebec to St. John, N. B.

P. A. Surgeon R. E. Ledbetter, U.S.N., ordered from the Norfolk Navy Yard to the *Glacier*.

Dr. John F. Leeper, U.S.A., granted two months leave.

Major William F. Lippitt, U.S.A., granted four months leave.

P. A. Surgeon J. D. Long, P.H.&M.H.S., ordered for duty as Assistant Director of Health of the Philippines and granted one month's leave.

Captain Charles Lynch, of the Army Medical Department and General Staff, recently medical attache with the Japanese forces, returned to Washington and engaged in the preparation of his Report.

Dr. James R. Mount, U.S.A., granted three months leave.

P. A. Surgeon J. L. Neilson, U.S.N., commissioned as such from October 4, 1905, and ordered from the New York Naval Hospital to the Newport Naval Hospital.

P. A. Surgeon T. B. McClintic, P.H.&M.H.S., appointed Chairman of an Examining Board at Washington.

Surgeon G. M. Magruder, P.H.&M.H.S., relieved from duty at San Francisco and granted four months leave.

Captain C. J. Manly, U.S.A., granted one month's leave.

Surgeon F. W. Meade, P.H.&M.H.S., ordered from Pittsburg, Pa., to Charleston S. C.

Lieutenant R. F. Metcalfe, U.S.A., ordered to Fort Leavenworth for temporary duty and thence to Columbus Barracks.

Assistant Surgeon J. Miller, U.S.N., ordered from the *Lawton* to the Midway Islands.

A. A. Surgeon J. T. Miller, U.S.N., ordered from the Sitka Naval Hospital home to await orders.

Lieutenant Robert E. Noble, U.S.A., married at Auburn, Ala., November 23, 1905, to Miss Ella L. Lupton.

P. A. Surgeon J. A. Nydegger, P.H.&M.H.S., granted one month's leave.

Major William O. Owen, U.S.A., retired from active service on account of disability.

Dr. Wallace E. Parkman, U.S.A., ordered to accompany troops from Fort Assinniboine to San Francisco, and to temporary duty at the Presidio of San Francisco.

Assistant Surgeon General W. J. Pettus, P.H.&M.H.S., appointed Chairman of an Examining Board at Washington.

Assistant Surgeon Joseph Pettyjohn, P.H.&M.H.S., ordered from Fort Stanton to San Francisco.

Dr. Joseph Pinquard, U.S.A., ordered to the United States for annulment of contract.

Assistant Surgeon R. C. Ransdall, U.S.N., appointed, to date from November 24, 1905.

Major Henry I. Raymond, U.S.A., ordered with recruits from Columbus Barracks to Vancouver Barracks.

P. A. Surgeon T. F. Richardson, P.H.&M.H.S., ordered from special temporary duty at New Orleans to rejoin station at Savannah.

Assistant Surgeon H. McG. Robertson, P.H.&M.H.S., ordered to Philadelphia, Pa.

Lieutenant E. P. Rockhill, U.S.A., ordered before the Presido Promotion Board for examination.

Assistant Surgeon W. C. Rucker, P.H.&M.H.S., ordered from special temporary duty at New Orleans to rejoin station at Boston, and appointed Recorder of an Examining Board.

Captain E. L. Ruffner, U.S.A., promoted from Lieutenant, December 15, 1905.

Assistant Surgeon H. Shaw, U.S.N., ordered from the Boston Naval Hospital to the *Southery* with additional duty at the Portsmouth Navy Yard.

Dr. Ernest F. Slater, U.S.A., returned to Fort Hancock from sick leave.

Surgeon A. C. Smith, P.H.&M.H.S., ordered from New Orleans to Pittsburg, Pa.

Major Henry D. Snyder, U.S.A., ordered to the State Militia Camp at Austin, Tex. for temporary duty.

Assistant Surgeon E. M. Steger, P.H.&M.H.S., ordered from Philadelphia to the revenue cutter *Algonquin*.

P. A. Surgeon J. Stepp, U.S.N., ordered from the *Southery* to the *Don Juan de Austria*.

P. A. Surgeon H. F. Striue, U.S.N., commissioned as such from May 8, 1905.

P. A. Surgeon Allan Stuart, U.S.N., ordered from the *Pensacola* to command the Sitka Naval Hospital.

A. A. Surgeon J. S. Taylor, P.H.&H.M.S., appointed Recorder of an Examining Board at Mobile.

Assistant Surgeon J. W. Trask, P.H.&M.H.S., appointed Recorder of an Examining Board at Washington.

P. A. Surgeon J. P. Traynor, U.S.N., commissioned as such from May 8, 1905, and ordered to the Boston Naval Hospital.

A. A. Surgeon F. W. Tyree, U.S.N., ordered from the Midway Islands to the San Francisco Naval Training Station.

Assistant Surgeon General George Tully Vaughan, P.H. & M.H.S., granted two months leave and resignation accepted to take effect February 9, 1906.

Assistant Surgeon E. A. Vickery, U.S.N., ordered to the *Illinois*.

P. A. Surgeon R. H. von Ezdorf, P.H.&M.H.S., ordered to Havana, Cuba.

Lieutenant Sanford H. Wadhams, U.S.A., granted one month's extension of leave, on the expiration of which he is relieved from duty at Alcatraz Island, and will proceed from Torrington, Conn. to Fort Slocum for duty.

Assistant Surgeon W. K. Ward, P.H.&M.H.S., ordered to Ellis Island, N. Y.

P. A. Surgeon B. S. Warren, P.H.&M.H.S., granted one month's extension of leave.

Dr. C. I. Wertenbaker, U.S.A., granted one month's leave.

Surgeon C. P. Wertenbaker, P.H.&M.H.S., ordered from special temporary duty at Atlanta, Ga. to immigration duty at St. John, N.B.

Assistant Surgeon L. H. Wheeler, U.S.N., ordered from the Newport Naval Hospital to the Asiatic Station.

Surgeon J. H. White, P.H. & M.H.S., ordered from Mobile to New Orleans.

Dr. J. Samuel White, U.S.A., granted a month's extension of leave.

P. A. Surgeon C. W. Wille, P.H.&M.H.S., granted two months leave.

P. A. Surgeon R. L. Wilson, P.H.&M.H.S., ordered from Vera Cruz, Mexico to New Orleans.

A. A. Surgeon A. H. Wise, U.S.N., ordered from recruiting duty to the Washington Navy Yard.

Assistant Surgeon J. S. Woodward, U.S.N., ordered from the *Brooklyn* to Colon, Panama, for special duty.

Surgeon R. M. Woodward, P.H. & M.H.S., appointed Chairman of an Examining Board at Boston.

THE AMERICAN JOURNAL OF CLINICAL MEDICINE is the new title of the *Alkaloidal Clinic* and indicates a wider development of that very popular publication. Under the energetic management of Drs. Abbott and Waugh and their associates, the changed journal will be sure to increase in influence and value.

THE ILLINOIS ASSOCIATION OF MILITARY SURGEONS met in Senn Hall, Rush Medical College, on the 9th inst. and listened to papers upon "The Physical Examination of Recruits," by Captain S. C. Stanton, "Operations of Emergency on the Urinary Bladder," by Major Charles Adams, "The Principals of Amputations with Demonstrations on the Cadaver," by Colonel Nicholas Senn, "Demonstration of Primary Dressing of Fractures," by Lieutenant H. W. Howard, and a surgical clinic, by Major D. W. Graham. The session closed with a dinner tendered to the Association by Surgeon General Senn.

THE GERMAN SURGEON GENERAL-IN-CHIEF.—Staff Surgeon-General Prof. Dr. von Leuthold, Physician-in-ordinary to the German Emperor, died in Berlin on the 4th ult. General von Leuthold served as Division Surgeon General in the Franco-Prussian War and thenceforth as Professor at the Kaiser Wilhelm's Academy of Medicine. At the time when he succeeded to the Surgeon-Generalcy he was Editor in Chief of the *Militärärztliche Zeitung*, which he had developed to a high degree of efficiency.

THE WORK OF THE MICHIGAN NATIONAL GUARD MEDICAL DEPARTMENT.—The report of the Commanding General of the Michigan National Guard Brigade for 1905 shows a high state of efficiency in its medical department under the Direction of Lieutenant Colonel Julius F. Henkel, whose work as Chairman of the Committee of Arrangements for the last meeting of the Association of Military Surgeons was so eminently successful. The umpires throughout the execution of the tactical problems spoke uniformly well of its work and the report of the Chief Surgeon himself indicates a thorough appreciation of the duties of medical officers. The Michigan National Guard had one officer among the graduates at the last session of the Army Medical School and has another in attendance at present, facts which speak well for the enthusiasm of the Corps.

THE ARMY MEDICAL ACT was duly introduced in Congress under the best of auspices at the opening of the present session. There was an inspiring comment of the President in his message that "Unless we now provide with ample forethought for the medical needs of the army and navy, appalling suffering of a preventable kind is sure to occur if the country ever goes to war. It is not reasonable to expect successful administration in time of war of a department which lacks a third of the number of officers necessary to perform the medical service in time of peace." An effective recommendation in favor of the bill was also made by Major General Leonard Wood in his Annual Report, and it is hoped that the strong representations made by these and many other well posted authorities will outweigh any notions of present expediency or temptations to take a parsimonious view of the question.

Current Literature.

SURGICAL REPORT ON THE SOUTH AFRICAN WAR.*

IN this magnificent folio work, issued by the British War Office, under the editorship of Surgeon General Stevenson, who was Principal Medical Officer of the Headquarters Staff in South Africa during the Anglo-Boer hostilities and who is himself the author of a large proportion of the contents, we have, for the first time, an authoritative consideration of the subject of gunshot wounds inflicted by modern missiles. The book is divided into sections comprising the injuries of the head and spine by Surgeon General Stevenson, injuries of the blood vessels and nerves by Lieutenant Colonel Sylvester, injuries of the abdominal and genital organs by Major Mallins and the editor, injuries of long bones and the joints by Brevet Lieutenant Colonel Hickson, injuries of the chest and neck by Major Holt, D.S.O., with an appendix on gunshot injuries of nerves by Dr. A. Young and sections on first field dressing, bullets and other missiles lodged in the tissues, and skiagraphy in war by the editor. The plan adopted is the collection and collation of cases along the lines of the localities under consideration in each case, with comments thereon and deductions therefrom. The book is magnificently illustrated, with photographs and skiagraphs demonstrating the conditions and conclusions of the text. The section on gunshot wounds of the abdomen is of particular interest and the conclusion is that primary laparotomy is undesirable, owing to the unfavorable conditions almost invariably present and uniformly found during the South African War. A section upon the first field dressing and its development, consequent upon the Anglo-

**Report on the Surgical Cases Noted in the South African War, 1899-1902.* Edited by Surgeon General W. F. STEVENSON, A.M.S. 4to: pp. 302, with 111 plates intercalated in the text. London, Harrison & Sons, 1905.

Boer experiences, is of interest and the editor suggests a dressing, the essential components of which are (1) a loose wove bandage $2\frac{1}{2}$ inches x $4\frac{1}{2}$ yards, (2) a piece of gauze 17x13 inches, (3) 100 to 110 grains of compressed absorbent cotton wove between layers of gauze, the layers to contain three per cent by weight of double cyanide of mercury and zinc.

DIAGNOSTICS OF INTERNAL MEDICINE.*

THE practitioner of today is highly favored in many ways, but in none more than in the possibility of using Butler's superb work on medical diagnosis, of which no less than 50,000 copies have been distributed throughout the profession. A second edition still further enhances the usefulness of a book, which would appear already to have been beyond improvement, but which bears evidences of the most careful revision upon the part of the author in every part. New sections upon diseases of the mind by Dr. William A. White and on x-ray work by Dr. Paul M. Pilcher still further increase the usefulness of the work. This edition will necessarily find its place upon the shelves of the progressive owners of the first issue, as well as among the working tools of many other up to date physicians.

OSLER'S PRACTICE.†

IN the period which has elapsed since the publication of the first edition of Osler's medical textbook in 1892, five editions have been issued, each of them containing such modifications as seemed necessary to keep the work abreast of the times. In the sixth edition, which has just been issued however, a much more complete revision has taken place, so many sections having been rewritten and so many alterations having been made that, as the author says, it is in many respects a new book. The high regard in which the teachings of Prof. Osler are held and the

***The Diagnostics of Internal Medicine.** By GLENTWORTH REEVE BUTLER, M.D. *Second Revised Edition.* 8vo; pp. 1168, with 288 illustrations. New York and London, D. Appleton & Co., 1905.

†**The Principles and Practice of Medicine.** By WILLIAM OSLER, M.D. Sixth Edition, thoroughly revised with new plates. 8vo; pp. 1143. New York and London, D. Appleton & Co., 1905.

personal affection with which he is individually regarded, will render this new revised and enlarged edition assured of a hearty welcome upon the part of the American medical profession.

THE INN OF REST.*

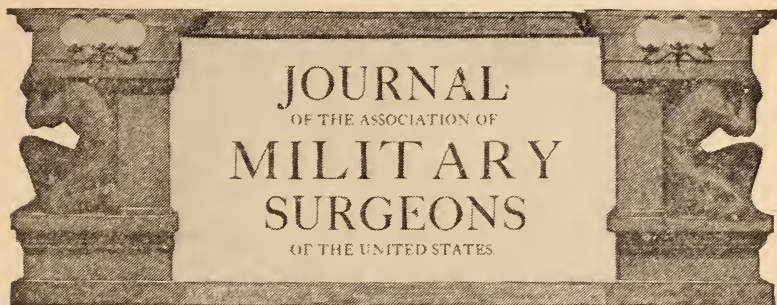
UNDER the suggestive appellation of *The Inn of Rest*, a series of papers relating to hospital life is presented under the editorship of Sheldon E. Ames, as the seventh volume of the *Doctor's Recreation Series*. A number of the articles are original, but all of them are popular in character and well worth preservation and the perusal of the patient. The articles upon the *Invalid's World*, which first appeared in *Scribner's Magazine* some twenty years ago, are particularly interesting, and we only regret that it was not practicable for the illustrations which originally appeared with them, to be reproduced as well as the papers themselves. An especially valuable paper is that upon *Pre-Christian Dispensaries and Hospitals*, a most instructive historical contribution showing a vast amount of research in its preparation.

BLAKISTON'S PHYSICIANS' VISITING LIST.†

THE regular annual issue of the useful *Physicians' Visiting List of Messrs. Blakiston* shows the excellent qualities for 1906, which have made it so popular heretofore.

**The Inn of Rest. Divers Episodes of Hospital Life Relative to the Doctor, the Nurse, the Patient.* Edited by SHELDON E. AMES. Vol. vii of the *Doctor's Recreation Series*. Edited by CHARLES WELLS MOULTON. 8vo; pp. 267, with 4 plates. Akron, Ohio, The Saalfield Publishing Co., 1905.

†*Physicians' Visiting List, 1906.* Philadelphia, P. Blakiston's Son & Co., 1905.

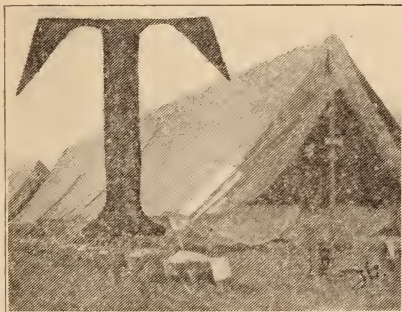


Original Memoirs.

AUTHORS ALONE ARE RESPONSIBLE FOR THE OPINIONS
EXPRESSED IN THEIR CONTRIBUTIONS.

ALCOHOL A DEPRECIATING FACTOR OF EFFICIENCY

BY GEORGE A. LUNG, A.M., M.D.,
SURGEON IN THE UNITED STATES NAVY.



HE views presented in this paper are based on a strictly professional regard of the subject. In this effort I wish to be disassociated from that most estimable class of people, the temperance workers, whose instruments are emotionalism and a pitiful regard of the afflicted. One may be in sympathy with their motives, if not their methods. It is true that no one can assume the role of urging restraint in the use of alcoholic beverages without being classed among them, and to that I must plead guilty. Likewise we cannot escape wholly the question of morals, because good health is our aim, and morals is but an exalted expression of good health.

In preparing this paper I have had in mind the character of the audience before which it was to be read; an audience composed of men whose training and careers lead them to conviction only through their intellects and never through their emotions. There is therefore no need to give you graphic descriptions of the pathological changes which occur in the tissues of the drunkard; to read to you long tables of statistics showing the close relationship between drunkenness and crime; that much of the physical degeneracies that afflict mankind have their origin in the abuse of alcohol.

All that you learned in your student days and have since confirmed in your professional observations. The literature of the day is full of it, so abundant that he who runs may read. Indeed the truth that alcohol is at times an evil, seems so firmly established, it cannot be a question for argument among well informed people.

So I shall accept as a postulate the opinion that the use of alcohol as a beverage may be, and often is, an evil.

The wonder is that, knowing such to be a fact, we as military surgeons do not more often apply it to our professional work, while we are all so eagerly seeking to apply every test to make perfect the organizations to which we belong.

As a matter of principle all clean minded men must condemn drunkenness as they do any other evil that afflicts the race. And if we recognize the principle, we cannot escape the duty naturally imposed on us to exert our best influences to further the every day practice of that principle.

It is to the physical bad affects of the use of alcohol that I would direct your attention; alcohol as a depreciating factor of efficiency in the naval and military organizations of our country.

And I have more in mind its application to the officers of these organizations than to the enlisted force, for the question as applied to the latter is so well defined, promptly recognized, and peremptorily punished, it needs no presentation here except, perhaps, by way of comparison.

It is a sad commentary on the frailty of the human race that drunkenness has always existed, and that "for fifty centuries,

punishments have been inflicted on drunkards, and attempts have been made to diminish or abolish the consumption of alcohol, with the result that the use of that poison is now more general and widespread on the globe than at any former period."

In going back in search for the beginning, one is quite ready to fancy that our Edenic ancestors were the first bibbers; that the original sin was drunkenness; that the forbidden fruit was an over-ripe one which Eve found by chance yeasting in the crevice of some rock.

In all times and among all peoples it has prevailed from the earliest records to the present day. From the time of that most ancient prototype of the sailor—Noah,—who, at the end of his notable voyage, planted a vineyard, made wine therefrom, and became drunk, down to the gay roisterer or repulsive debauchee of to-day, drunkenness has been an evil among men. In fact it has been an evil for so long in spite of its condemnation by reformers and has been such a universal habit, that efforts heretofore seem almost to have been futile, and the evil to the present time an incurable one.

The history of drunkenness is as old as literature. We see on the tombs of ancient Egypt erected 3,000 years before Christ, pictures of drunken men being carried home from a feast by their slaves.

Chinese literature tells us that at an equally early date the emperor banished a subject for inventing a new intoxicant from rice. In the same country nearly 500 before Christ, beheading was the penalty for liquor selling, and 200 before Christ an anti-treating law was tried which forbade more than three men to drink together. China cannot be regarded, however, as having been given to drunkenness, probably always influenced by racial, climatic, and religious conditions.

In India drunkenness became so prevalent at one time that both Hindu and Buddhist religions required total abstinence, which in the union of church and state became a religious precept and a civil law.

Mohammed's prohibitory law in the Koran against drunkenness, first applied to Arabia, has spread abstinence among millions

in Asia and Africa, which as part of a religious creed is more or less studiously observed to this day.

Early Greece and Rome were founded on a basis of hostility, sentimental and legal, to the use of intoxicating liquors.

Plato taught that one should not drink wine until thirty, and never should allow himself to become intoxicated till after forty.

The early Roman law ranked drunkenness in a wife along with adultery, and permitted the husband to kill his wife if guilty of either.

Libations to the gods were ordinarily with milk. Later wine was used. Finally in the worship of Bacchus drunkenness became so rife it stands among the chief evils that attended the death of the empire.

In Pliny's time it became notorious. Guests at a feast vied with each other in seeing who could drink the most. One man is recorded as having had a capacity of three gallons, and later he was surpassed by one who could drink twice as much. The drink of those times was fermented wine, the art of distilling not having been invented.

The early tribes of Germany and Great Britain were given to great excesses in using the fermented drinks made from wheat and barley, the making of which they had learned from the Romans.

In Great Britain the drinking houses became such centres of drunkenness, the clergy were put in charge, with the view of their being conducted more properly. But the clergy themselves became addicted to the habit, and it is recorded that a penance lasting three days was imposed on priests who got drunk when about to go on duty at the altar.

Immediately after the Crusades the returning knights, lacking excitement and the diversions they had enjoyed, resorted to intoxicating drinks, and drunkenness became alarmingly common.

Drunkenness is common to the occident rather than to the orient; of the temperate zone than the tropics; of the Caucasian rather than the brown or black races; common with the so-called

Christian races; and among the Caucasian, the Anglo-Saxon stands preeminent.

Drunkenness was introduced into America by the early colonists who brought the custom from Europe. Here it found a peculiarly fertile field, due as many explain, to climatic and racial conditions. It has come to be one marked expression of the American character, an open folly of the nation's youth, its measure of cerebral excitability, and follows along with intemperance in feeling, intemperance in speculation, and intemperance in display.

The nations most given to drunkenness today are the United States, Great Britain, Germany, Russia, and France.

Along with this history of excessive drinking there is a correlative history of influences tending to antagonize drunkenness. Men prompted by personal reasons, the good of the state, or to protect morals, have opposed it with every means that human ingenuity could invent. And history shows that their efforts were coeval with the prevalence of the habit. Thus there is on record 200 years before Christ that at least one advocate of temperance lived. He was a teacher and chided his bibulous pupils by saying, "I thy superior forbid thee to go to the taverns, Thou art degraded like the beasts."

From the earliest times laws have been enacted limiting the manufacture, sale, and use of intoxicants, and for the punishing of drunkenness, all prompted by the worthy notion of promoting civic welfare. Preachers and reformers have worked zealously for the suppression of the evil that morals might flourish. Philosophers, holding that drunkenness is a disturber of human peace and harmony, have labored unceasingly for its extinction, and yet the evil persists, spreading throughout the world like an infectious disease in fields favorable to its growth.

The history of modern temperance reform is no less interesting than that of the evil which it tries to destroy. To Dr. Benjamin Rush a skillful physician and highly esteemed citizen of Philadelphia, is given the credit of first making deliberate public protests in this country against the use of distilled liquors. He

began his labors in that direction as early as 1785. At that time drunkenness from the use of simple fermented drinks was not as common as today. He persuaded his associates of the College of Physicians, that the habitual use of distilled liquors was unnecessary, and they united in an appeal to Congress to impose such heavy duties on distilled spirits as was effective to restrain their intemperate use in this country.

About the same time the sentiment spreading, temperance societies began to be organized. Litchfield, Connecticut, is said to have been the first in this movement. Down to 1826, no society did more than urge moderation in the use of intoxicants, hence the use of the word temperance. Beer and wine were held to be temperance drinks.

By 1836 it was held by the various temperance societies that the only effective basis for temperance work was total abstinence from all drinks capable of producing intoxication.

About the same time church societies became interested and temperance was preached as a moral Christian duty. The Reverend Lyman Beecher was a pioneer in this direction.

Then followed rapidly the American Temperance Union, the Washingtonian Movement, in which conspicuously figured the eloquent agitator John B. Gough. The Sons of Temperance, the Rechabites, introduced from England, the Good Samaritans, and the Good Templars. All these had for their main purpose the enactment of laws enforcing prohibition.

The Civil War checked the efforts of these organizations, the nation's attention being held by more serious problems, and also a little later by the introduction of German beer which soon came to be the popular drink.

In 1872 came the Woman's Temperance Crusade, carried on in the central and middle western states. Commendable in its aims, it became grotesque because of the methods adopted, and it is questionable whether it accomplished any direct and lasting results. Nevertheless out of that grotesqueness grew the greatest temperance organization the world has ever seen, the Woman's Christian Temperance Union, which has extended its influence in nearly every city of the United States, and nearly every country

of the world. Its first work was in reforming drunkards. Later it dealt more with prevention, especially legislation and child training. It is a powerful organization, displaying the labors of many influential and zealous people, and controlling large sums of money for its maintenance and progress. Its aims are unquestionably good. Its efforts are in a large degree matters of experiment thus far, but the results, imperfectly as they can be measured demand our respectful attention and esteem.

It is to this latter organization that we are indebted for some of the restrictions placed on the two services regarding the sale and dispensing of intoxicants.

This society through the efforts of one of its members, succeeded in establishing compulsory scientific education regarding the bad results from the use of alcohol, in all the schools of the nation, which has been in force for over thirty years.

In politics we have had the Prohibition Party which has had no mean following.

Until lately temperance and abstinence have been little more than negative qualities, a passive virtue gained through abstention from an evil. But during the last few years temperance has come to have a positive quality, a fixed commercial value.

In 1895 the railroads of the country began to require of their employees total abstinence, and many business houses and organizations have adopted the same policy.

The Economic Aspects of the Liquor Question is a summary of an investigation by Congress made that same year. More than half of the establishments reporting in this investigation, require in certain occupations, and under certain conditions that employees shall not use intoxicants.

In 1899 Congress passed the first national prohibition law for white men, prohibiting even the sale of light wines and beer in Army canteens. Two years later this law was reaffirmed, and in 1903 it was followed by laws excluding intoxicating liquors from the United States immigrant stations, and the Capitol, in further development of the policy of prohibiting liquor selling in government buildings.

The use of intoxicants has come to be a factor in the consideration of life insurance risks.

Thus we see in this very brief and imperfect historical sketch the existence of two opposing elements. First the users of alcoholic liquors, and second those who, as individuals or organized bodies, would discourage the first in their practices.

The user of alcohol ordinarily feels that what he drinks and how much he drinks is, to use the vernacular, nobody's business but his own; that the question concerns no one but himself any more than that of what or how he eats, the quality of his clothing, or the character of his dwelling.

Alcohol he says, brings comfort, and good cheer, promotes hospitality and good fellowship, elevates the spirits, inspires the imagination, spares from melancholy, relieves pain, and last of all he falls back on that almost century old argument for quasi-scientific debate that it is a food and sustains the body.

He admits perhaps, that at times it has provoked discomfort and unhappiness, but what of the pleasure it has evoked! Has it not given us as many joys as sorrows? Therefore why lay it aside?

Like food, raiment, and shelter, and the virtues and vices that arise from a struggle for them, alcohol with its good and bad effects has always been with us and probably will forever be with us. Glorified in song, praised in verse, figured in statuary, honored in famous paintings, deified by the ancients, alcohol stands as something we cannot dismiss with a mere judicial nod of approval or disapproval. Like the craving for food, or the insistent sexual demand, it gives rise to appetites that hold no small place in the complex affairs of life. That it has its legitimate uses in the human economy, no one can truthfully deny, and that it has saved life no one can honestly doubt.

The evils that arise from alcohol are from its abuse, not its use. But who is to be the authority to set the limit and say where safety ends and danger begins? As a beverage or even as a medicine I am almost convinced that the world could be deprived of alcohol and not suffer. I am almost convinced that the world would be better for its absence.

If we admit that it is an innocent appetite with only a possible evil end in view, we must also admit that the universal craving, sooner or later gives license for an indulgence that makes that evil end, not only possible, but even probable.

The manufacturers of alcoholic drinks are eloquent promoters of the drink habit. Their own particular literature which they spread broadcast, is today the only unqualified encouragement of drinking that I know of.

Against the drinkers and those who would belittle the dangers from the habit, is arrayed the army of reformers, moralists, preachers, philanthropists, statesmen, physicians. Each in turn pronounce the custom an evil, a vice, a sin, a disgrace, a national defect, a disease. And each with his best instruments contends for its suppression.

Thus has grown the temperance cause. It brings to its aid all possible means to further its aims. Being convinced that drunkenness is an evil, they aim through the medium of the individual, the family, the school, the town, the state, the nation, to remove and destroy it.

Whatever may be said about the imperfections of their methods and the apparent lack at times of definite results, the intention at least is a most commendable one, and worthy of our support, since it has for its aim the betterment of mankind.

In late years drunkenness has come to be more widely regarded in a new light. The question of morals is left in the background. Even the question of ethics is not directly concerned. It takes into consideration the material, readily recognized physical changes which occur in the individual who has made a misuse of alcohol as a beverage. In other words it is placed in the category of the diseases that afflict mankind.

As a disease, drunkenness is so insidious in its onset, so variegated in its course, and so complex in its final display of symptoms, that it is difficult to show it as an entity according to the usual methods of describing a disease.

I can best present the subject by giving you a classification of the persons afflicted, rather than give a course of symptoms.

The division is my own, but it is in accord with the opinions of competent men who have made a careful study of the subject.

Individuals who use alcoholic beverages may be regarded as divided into three classes.

First.—Those who drink in moderation. It may be the youth in his first cups, or the mature individual who takes comfort in his occasional draught. From this indulgence he may display no moral or physical disarrangement, because the indulgence is moderate, or abundant good health enables him to promptly survive its depressing effects. Or if the indulgence is disturbing he allows a sufficient time to elapse between his potions, during which, he recovers from any disturbance that the spree may have caused. He may even become intoxicated at times, but it does not necessarily become a habit. He drinks, or he does not according to his fancy, never in great excess, and not at frequent intervals. In doing so he cannot be accused of a vice. In view of what may follow, it may be termed a folly.

Public opinion or its expression in the shape of law, has no fault to find with him because of his drinking or his intoxication, except in so far as he may incapacitate himself for the full performance of his particular duties, or render himself offensive to others.

Primarily both drinking and the act of getting drunk are acts that pertain solely to the individual. For them he is responsible alone to himself, and no one can positively gainsay his right to do either.

To this class belong the so called drinking men or occasional drinkers. Continuing the custom which they have adopted, they often live comfortable and healthy lives, perform well their duties, and finally die at a ripe old age from causes other than alcoholism. In this class are many men, who judging from their own experiences, are ready to aver that moderate drinking is safe and even beneficial. Some are the opponents of total abstinence, and regard temperance workers as over zealous, and hold that those who drink to excess, do so prompted by some inherent vicious tendency in that individual, and not because of any quality or direct effects of the drink they consume.

These people are not abstainers, but they may often be classified as temperate since they drink in moderation.

If happily the tendencies of the race did not go beyond that, and there were but this one class of drinking men, and no individuals in it advanced beyond this temperate indulgence, drinking could never be held to be wrong in any sense, and the temperance cause would be without a task.

Unfortunately, however, many individuals in the class of occasional drinkers do not remain such. Finding solace and comfort in alcohol, they resort to its use more frequently. Like the beginner in the use of opium and cocaine, an appetite is acquired. Fondness for the taste increases and a longing for its peculiar effects soon becomes fixed. What was at first an innocent practice now comes to be the nature of a vice. The will is often placed in abeyance. The moral sense is disturbed. The health is functionally disarranged. The victim becomes offensive to his neighbors, and he is often wholly or in part incapacitated for the performance of his duties. His straying from the path of rectitude renders him liable to legal punishments. Sooner or later he becomes a defective citizen, and a bad example to growing youths. Perhaps he may recognize his defect and rise above it, but ordinarily the habit becomes so confirmed he cannot remain superior to it, except by some unusual and often heroic means. He soon displays outwardly the manifestations of the pathological changes occurring within his body. The congested eyes, the suffused and bloated features, the trembling hand, are a few of the many signs only too commonly seen to be unfamiliar with. The craving for stimulants grows apace. What was at first a satisfying quantity, now is insufficient, and the inordinate and insatiate thirst demands enormous quantities and at frequent intervals. He now drinks not to satisfy a normal thirst or alone for the desire to promote conviviality, but to satisfy an abnormal craving and to obtain the artificial temporary support that the intoxicant gives his deranged nervous system. These comprise the second class or the drunkards.

The third class is made of advanced cases of this second class. They are termed inebriates. In them all moral sense is gone, and

mental responsibility is absent. The physical life is shattered, often beyond repair. All efforts in the performance of work are futile. He is worse than useless as a citizen. He becomes a burden to his family and later, if he is fortunate enough to have discerning friends, he is sent to a sanitarium where he is regarded as a sick man and treated accordingly. He is suffering from the disease known as inebriety. His thirst is not the disease, but one of its manifestations. Within him are all those pathological conditions known to us, and which give rise to the physical and psychological disharmonies which he displays.

In addition to these three classes, there is one other which should not be overlooked, though it is not wholly essential to the aim of this paper. I refer to a class who from some lesion of their nervous system, due to a traumatism or other equally well recognized cause, suddenly change from abstainers or moderate drinkers to inebriates of the worst type. In such cases the pathological condition gives rise to the fondness for intoxicants and not the intoxicant the pathological condition. These cases fortunately are not common, as compared with the other classes, and being generally well recognized, at once take their place as subjects for treatment by the surgeon or alienist.

Now all drinking men do not become drunkards, nor do all drunkards become inebriates. But all inebriates are graduates from drunkards, and all drunkards were at one time merely drinking men. And all drinking men were at one time, through ignorance or their own volition, total abstainers.

And herein lies the strongest argument of the advocates of total abstinence.

These three classes are purely arbitrary ones, and are used to present a logical display rather than to portray readily recognized stages of progression. There are no well defined lines of demarcation between them. One, because of good health, temperament, or a strong will, may never advance beyond the mildest form of the first class. Or once the indulgence begun, the individual may rush into the other successive stages with an abandon that startles even his associates. Or again the three stages may merge into one another as gradually and impercept-

ably as youth into manhood, and manhood into old age. No young man, or even an old one, who may be classed as an occasional drinker, can foretell to a certainty that he will not degrade as he advances in years, first to the state of a drunkard, and then to that of the inebriate. If we follow the injunction of Plato, it may be generally asserted, that one who has drunk only in moderation after thirty, and made his sportive sprees after forty, may feel pretty sure that he will not degrade into the other undesirable stages. But though he may be satisfied as to himself, he has not escaped the responsibility that his example and influence on others has been.

And who can assert with positiveness whether the incipient stages of the pathological conditions, have their beginning in the first fifty libations, or the last five hundred drinks indulged in?

Therefore says the advocate of abstinence if you would not be an inebriate do not be a drunkard, and if not a drunkard, do not drink—never drink at all. If you would not be burned, keep away from the fire. If you would not have typhoid fever, do not drink the contaminated water; you may be among the fifty who do not contract the disease, being apparently immune, and you may be among the fifty who contract the disease, and perhaps among that fifty, you may be one of the twenty-five who lose their lives thereby.

But where is the application of all this if I am not preaching a temperance lecture? Simply this, that drunkenness has come to be recognized as a disease which not only unbalances the normal physical life of the individual, but he is thereby rendered a disturbing factor in every well organized walk in life, whether it be in developing the arts of peace or practicing the science of war.

In science, art, morals, finance, agriculture—all the multitude of forces that go to make the nation's welfare and success, the drunkard can be awarded no place. Because of his habit he is more or less disqualified. He is an uncertain quantity, a disturbing element, often a needless burden, a cumberer of the ground, occupying the place of a better man; a care from whom comes no wholesome return.

My regard of the subject as entertained for this paper is not complete without some comment on treatment.

The professional care of the inebriate is fully set forth in the particular works of that branch of medical literature. Abstinence, the judicious use of drugs to temporarily take the place of alcohol and bridge over from the period of helplessness to the period when the force of the will is reestablished; the ingestion of wholesome food and promotion of rapid metabolism; moral suasion and legitimate psychic influences professionally applied, are some of the means employed. They need no elaboration here.

Likewise you all know as well as I, the care of the drunkard. The sedatives, the cathartics, the emetics, the shrewdly selected nerve stimulant, the dietetic restraints, are all known to you from frequent observation, and not infrequent application.

The treatment sometimes meets with success, and one can find, by searching, notable examples of complete cures. We seldom see cases of well developed inebriety among us, because dismissal by court martial, retirement, retreat to the hospital or sanitarium, or death soon gets them from our sight.

The treatment of the drunkard as commonly practiced, is only palliative. The quality that makes the patient a drunkard persists, and as a rule the acute discomfort entailed by the debauch, once allayed, that quality again asserts itself.

The treatment of the temperate drinker lies almost wholly within himself—the force of his will. His folly—the incubative stage of the disease that may follow, is a question that rests in his own individual mental and moral responsibility.

And since inebriety is a well recognized disease, and drunkenness its acute or prodromal stage, and drinking its incubative period, prophylactic measures at once suggest themselves to the medical mind.

In that attitude he allies himself with the temperance worker.

Prohibition, child education, moral influence, public sentiment, the utility of normal good health, are all prophylactic means to prevent the propagation of the disease, inebriety.

For the ignorant, the irresponsible, the degenerate, prohi-

bition serves as a powerful and useful agent. It is applied with some degree of success to the Indian, the negro, some barbarous tribes, the illiterate and degraded classes, and sometimes in a community or organization where the righteous majority impose restraints on the reckless minority. It is often interpreted by some as an infringement on individual rights and privileges, and invokes much bitterness of feeling to say nothing of harsh political strife.

License with its many modifications involving the quantity sold, the time, place, and by whom purchased, has many advocates and is in force in the majority of the States. It is a compromise, a half way measure, but nevertheless has the merit of restraining indiscriminate dispensing of intoxicants. It often prevents those who are already drunkards from becoming more so, and excludes as a rule minors from indulgence.

Moral influences work much good toward the prevention of the disease. In some the measure appeals to their sense of decency and right, and when intimately associated with religion, temperance assumes the dignity of a virtue.

Public sentiment is often a deterrent against the habit of drinking. Not the sentiment that has become a law, but that unrecorded opinion with which a community may regard the misdoings of its own members. Most men regulate many of their acts according to the public sentiment that prevails in the community in which they live. Because of that, some who do not drink, will not begin the habit, and those in whom the habit is confirmed, dreading the condemnation of public opinion, will drink less or have a care that their infirmity is not made conspicuous.

Child training has been enforced under statute law for many years. Its intention is to train the mind of the child by precept and knowledge, so that when he comes to know that there is such a thing as alcohol to drink, he is fully informed as to its immediate disturbing and also its remote direful effects. As a prophylactic measure it is ideal in its conception. If it could be intelligently and comprehensively applied, another generation would show drunkenness reduced to a minimum, and inebriety almost eradicated.

Unfortunately it is deformed by antagonism, and distorted by the personal equation of those inculcating it, and therefore many would have us believe that it is a failure. But the principle is a high one, and its practical application feasible. The defects are incidental and possible of correction. The results can never be tabulated in the form of statistics. Only the general results at the end of a generation or two may be approximately given.

This method has been applied to the students at West Point and Annapolis with unexpressed results. So far as I can learn from my own inquiries, the instruction is done in a perfunctory manner, and the students, now officers, with many of whom I have purposely conversed, would seem to have no further recollection of the lectures than the odd appearance of the lecturer, his funny stories, or the lackadaisical manner of imparting his information.

It would be unfair to say that no good has been accomplished. In all probability some have been influenced in the way that is desired. They do not proclaim the fact, however, and I have yet to find one to admit it on inquiry.

Of all the prophylactic measures against inebriety, utility appears to me to be the one of the widest possible application, and more potent in its influences than all the others combined. It appeals to the individual and to the community, the employer and the employee. The good sense of it is unimpeachable. It takes rank in economics along with skill and dexterity, the value of the unit as a producer of values—the ability to be, to do, to consummate.

Leaving out the question of inebriety as a disease, which many may avoid because of a dread such as one might have for any well known dangerous disease, it concerns the question of the depreciation of the individual because he is a drunkard, and the superiority, by contrast, of the one who is an abstainer. The temperance cause can claim no direct credit for the existence of this sentiment. The abstinence or temperance imposed by utility does not come from a mere negative quality, the abstinence from

an evil, but from an intelligent valuation of the elements that count in these days of sharp rivalry in industry.

The idea is well expressed by Mr. Henry W. Farnam in the Report of the Sub-Committee of Fifty on the Economic Aspects of the Liquor Problem—

“As more things are done by machinery, as trolley cars supplant horse-cars, as implements of greater precision and refinement take the place of cruder ones, as the speed at which machinery is run is increased, as the intensity with which people work becomes greater, the necessity of having a clear head during the hours of labor becomes imperative, and the very conditions of modern business life necessitate sobriety on the part of the workers.”

The report of the Department of Commerce and Labor on this subject reveals wide acceptance of the value of utility as it bears on the liquor question. The inquiry made brought returns from over 7,000 establishments employing 1,700,000 persons. In transportation lines 713 replied representing 458,000 employees. Of the 6,976 who answered the specific inquiries regarding liquor, 5,363 reported that means were taken to ascertain the habits of employees to estimate their reliability thereby, and 1,794 more or less strictly prohibited drinking.

Those of you who are familiar with the requirements of life insurance companies on their risks, know what value is placed on sobriety.

And all of us know within our better judgment how we personally gauge the value of a man, when exactness and precision are expected of him, when we know that he drinks or he does not drink.

How can we best apply these prophylactic measures to ourselves and those we would reach?

From my own observation and on the class of men I have in mind, prohibition is of little avail. It at once invites antagonism, since it is commonly regarded as unjustly limiting the individual's privileges. An impersonal authority may impose prohibition on an organization, and it may prevent much drinking and drunkenness, at the same time many with silent defiance will

retire behind the privacy of their curtain or to the secret chamber, resorting to petty concealments to hide the thing and the act that the law prohibits.

License only hampers with but little restraint, the man it aims to control. It has the virtue of keeping minors strangers to the temptation of alcoholic intoxication.

Moral influence is of limited value, and is a light weight when balanced against the worldly pleasures that intoxication offers.

Public sentiment more often than otherwise is met with a sharp semi-profane expletive of contempt. It is only a half brother to prohibition.

Child training, of course, does not fit.

But in utility we have an agent that is strong. By it we can appeal to the patriotism, pride, and the vanity of our patient—love of the service, and love of self. Convince him of the dangers to his health, and that to his repute as a qualified, efficient being with a commission, and the chances are that he will become immune to drunkenness and inebriety.

Are his senses always alert to perceive the sound of the bugle or the roll of the drum—the signal to sudden and unexpected duty? Is his mind clear and keen to discern when quick judgment is demanded of him? Are his heart, stomach, and muscles ready for the physical test that may at any moment be thrust upon him? Is he always equal to the satisfactory performance of independent and hazardous duty?

Any and all things that force him to answer these in the negative, or even qualifiedly, are to be condemned.

This is the question of utility as applied to the individual. The central authority can make an equally good use of it, for in it resides the function of forming and promoting the standards of excellence.

If the width of the braid, the position of a button, the lacing of a shoe, are points worth considering in aiming for efficiency, is not inebriety the disease, chronic and well established, or drunkenness its acute stage, or even simple drinking, its incubative period, deserving of every one's serious consideration?

And especially does it concern us whose particular duty is to promote efficiency through the preservation of bodily health.

These are the days when national greatness prompts us to the doing or being prepared to do great things. National rivalries stir up wholesome emulation. The successes of others stimulate us to the attainment of perfection and efficiency. To that end, money, men, organization, drilling, discipline, and sanitary science are applied to their utmost application,—or ought to be.

The great aim is to scrupulously eliminate all that is deterrent to perfection, and to carefully nourish every element and condition that is favoring.

Our duty as medical officers is patent. We do not have to search for it. It is thrust upon our attention and we cannot ignore it even if we would close our eyes and pretend dullness of hearing.

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THE NEW GERMAN BULLET.

THE German forces are to be provided with a new cartridge called the *Spitzgeschoss* on account of the characteristic shape of its missile. The new missile weighs less than 10 grams instead of 14.7 as did the former. It is of hardened lead coated with German silver. Its initial velocity is considerably greater and its trajectory broader than the former missile. At 100 meters it penetrates wood to the depth of 80 centimeters. At 400 meters it traverses 80 centimeters thickness of pine; at 800 meters 35 centimeters; at 1,800, 10 centimeters. An iron plate, 7 millimeters thick, was traversed at 300 meters. A steel plate 9 mm. 5 was deeply dented at 100 meters. It penetrates deeply into sand and earth also. Walls made of a single ordinary paving stone are readily traversed. Those formed of several stones laid thickly are easily broken in places.

SOME OBSERVATIONS CONCERNING THE CONTROLLING OF EPIDEMICS.

By MAJOR EDWARD CHAMPE CARTER,

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TO control an epidemic requires a knowledge of (*A*) the epidemic disease, (*B*) the terrain or field of campaign, and (*C*) the population affected.

It can not be too strongly insisted on that a knowledge, not of one factor, but of all three factors, is essential to carry on a successful campaign against an epidemic.

1. It is easier to acquire a knowledge of the nature of an epidemic i. e. of the history, symptomatology, diagnosis, treatment, aetiology and prophylaxis of a disease than it is to secure a knowledge of the field of operations or of the inhabitants among whom the sanitary officials must operate. For the knowledge of diseases may be gathered from books, from the observations of others, from experiments in laboratories, as well as from the personal experience of the seeker after knowledge; whereas the knowledge of a terrain, or of its inhabitants is to be acquired from personal observation only.

Every well-informed physician may be considered to possess sufficient knowledge of epidemic disease to take professional charge of patients afflicted therewith, to practice prophylaxis and to indicate the steps to be taken to prevent the spread of the disease; but not every physician, however well-informed and devoted he may be, is qualified to control an epidemic.

Indeed it is sometimes true that a capable and conscientious physician may wield a detrimental, rather than a beneficial influence in times of epidemics. In making this statement there is no intention to underestimate the value of the services of such men in epidemics. For it is to the wise physicians that the community and the government must look for the care of the sick—

the management of the hospitals for contagious diseases, and especially for the establishment of a feeling of confidence and hope among the people without which feeling the most earnest efforts of the sanitarian may be paralyzed.

2. As a knowledge of an epidemic disease may be acquired from books and other sources, so, to a less extent, a knowledge of a terrain may be acquired from maps, descriptions and sketches.

But as personal observation or experience is needed to complete one's professional knowledge, so too it is necessary for any one, on whom is placed the responsibility of directing a campaign against an epidemic, to supplement his knowledge derived from maps, descriptions, sketches, etc., or by a close personal study of the field of operations.

In fact, given an epidemic and a certain region to be controlled, and the problem resembles in many ways the problem a General has when in the presence of an enemy, and as the General must know his field of operations, so the sanitarian, health officer, or whatever be his title, must know the field of his operations, must keep in touch with the enemy, must be ever on the alert to meet sudden advances, to avoid being deceived by false retreats, or to guard against being lulled into a deceptive feeling of security by the apparent inactivity of the enemy.

The sanitarian may rest assured that so long as an epidemic exists, however "benign" or "attenuated" it may be, there is probability—nay almost certainty—of its increase and spread. Therefore his knowledge must embrace not only the lines of trade and communication and the general lie of the land, but also the minute subdivisions or places where epidemics may lie in ambush. In other words, the sanitarian must know the general topography, the minute topography, the social topography, and the domestic topography of his field of campaign. And his knowledge must be both comprehensive and minute, and above all things accurate and exact.

It is obvious that such knowledge can be secured by one person with great difficulty, or if one possessed it may soon be forgot. Therefore it is necessary for the sanitarian-in-chief to

have subordinates, whose duty it is to supervise or inspect certain definite regions. These subordinates may be called inspectors, and of course the better the man the better the inspector. An honest, careful, systematic inspector is an invaluable helper to the sanitarian. This truism is emphasized for sometimes the error is made of appointing many inspectors rather than proper inspectors.

All manner of ill results follow if that error be committed. For incompetent inspectors may render useless the whole plan of a sanitary campaign through ignorance or inadvertence, or even through intentional deception. Moreover the inspectors may sometimes be expected to exercise the functions of civil police or constables, and these functions should not be intrusted at any time to incompetent persons. Certainly not in times of epidemics, when a condition of anxiety and distress exists among the afflicted people.

Therefore let the sanitarian-in-chief exercise discretion in selecting his subordinates, and let him see to it that they have a due sense of their responsibilities and duties and also of the rights and needs of the inhabitants. For if the rights and needs of the inhabitants are not respected, the inspectors will be looked on as enemies, and they will be misled, deceived, molested and fought just as enemies are. The problem before the sanitarian-in-chief then, will be the problem facing a General in the presence of an enemy in a region whose inhabitants are in a condition of hostility.

3. And to avoid the hostility, a knowledge of the inhabitants is necessary.

It must be known how and on what they live, what are their habits, their sentiments, their feelings, their predilections and their prejudices.

Otherwise measures, apparently reasonable and adequate may, when taken, cause distress, and produce a feeling of antagonism that will destroy the efficiency of the most carefully arranged programme. One of the most important duties of the sanitarian therefore, is to array on his side, as far as possible, the "public opinion" of the inhabitants. To do this he must in-

terfere with their habits when necessary only, and he should have his reasons for interference clearly understood and expressed.

He must respect the sentiments, the feelings, the predilections and the prejudices of the people as far as may be, with safety to the commonwealth. And in all cases it should be remembered that oppressive measures lead to the concealing of cases, and that concealed cases are more dangerous, i. e. more likely to be sources of further spread of epidemics, than known cases. It is believed that these remarks will suffice to demonstrate the necessity of "knowing the inhabitants as well as of knowing the country, the disease or the methods of treatment."

Unfortunately there is not much time to create or to control public opinion in the face of an epidemic. We may prepare our plans, arrange our administrative and other machinery, secure our supplies and apparatus beforehand—indeed these should be kept always ready for use—but without the backing of public opinion, i. e. the aid and consent of the people themselves the work of eradicating an epidemic will be laborious, difficult and unsatisfactory.

This difficulty may be diminished in well informed and disciplined communities, by laying before the people, especially the physicians, the conditions that exist, the dangers to be expected, and the measures to be undertaken, and by securing their assistance in reporting and caring for cases and in carrying out the proposed measures.

If hospitals or lazarettos are to be established, they should be made as attractive and as pleasant as possible, and special attention should be paid to the comfort of all persons sent to them. If the aid of the physicians and of other intelligent persons is secured, a long step has been taken toward moulding public opinion.

Public meetings, addresses and lectures may be of benefit. Indeed they should be, but they have been known to do harm among an undisciplined and suspicious people.

It is obvious that tact, patience, ability to inspire confidence, as well as a clearly defined, yet elastic plan, must be possessed by a successful sanitarian. He should be sympathetic and cour-

teous as well as firm and intrepid. He should know how to attain his ends with as little friction as possible, i. e. by following to his end the lines of least resistance; and he must be able to formulate plans both definite and elastic. It is presupposed he should have the requisite professional and scientific information.

Many plans for the prevention and control of epidemics have been formulated and successfully carried out—especially by our admirable Public Health and Marine Hospital Service and by the no less admirable sanitary services of Germany, France and Japan.

The system and work of the Army Medical Corps in Cuba and Porto Rico need hardly be mentioned before this audience.

As there have been many excellent systems for successfully combating epidemics, one would be bold indeed to advocate a special system as being the best or most practical. Nevertheless certain general principles apply to all good systems; and it is hoped that the mentioning of a few of these general principles may call forth the naming of others by men who are interested in the efforts to suppress epidemics or on other sanitary matters.

1. Measures to prevent or control epidemics should be in the hands of the *National Government*, for the following reasons, among others:

(a). An organization must be ready; and material available, for immediate use. Now material is perishable and the expense of renewing it, as well as of keeping an organization, on what may be termed a mobile footing, is considerable and would hardly be incurred by municipal, or even state authorities except in the presence of an epidemic, i. e. after an epidemic has started, and generally only after it has become formidable; when efforts to suppress are not so likely to be successful as they would have been had they been applied to prevent. Moreover a national organization is available to suppress an epidemic anywhere within the boundaries of the nation, and is likely to be in use more often than a local organization and therefore its preparation and equipment are less likely to be postponed until the outbreak of an epidemic has occurred.

(b). The expense of an adequately equipped organization is

too great properly to be undertaken by local authorities, except in rare cases of wealthy and enlightened communities.

(c). A national organization is less likely to be interfered with by local influence or interests; and the odium a carefully enforced sanitary programme may cause is better borne by a national than by a local organization. For in spite of all the tact, courtesy and gentleness the sanitarian may employ, there will be some persons who consider themselves aggrieved. Now the national organization having done its work goes away, and the annoyance it may have caused will most likely die out before occasion arises for its return. Whereas the local organization being composed of residents may feel for a long time the effects of popular dislike.

It is insisted on however that the aid of the physicians and of all other intelligent persons in a community should be solicited and utilized when possible in handling cases and in carrying out prophylactic measures.

2. An epidemic can be successfully handled only by a competent person on the spot.

Pages might be written to demonstrate this proposition, which to one who has had the practical handling of an epidemic is a truism.

The head of the sanitary organization at the place of epidemic must be the *head*, and while due subordination to control authority is necessary the local head must have authority and discretion to act as well as to report.

It is only when no suitable official is available for the local or district sanitary head that the Central Bureau should assume direct charge of the situation. Broadly speaking, such action on the part of the Central Bureau is commonly fraught with danger, and invites disaster.

3. The national authorities (chief sanitary officer) should secure and utilize as far as possible the aid of local state or municipal authorities, especially in the matter of securing information of the existence of "suspicious" cases, caring for the sick, quieting the anxieties and fears of the population.

4. Hospitals, camps, and places to which patients, suspects.

or contacts are sent should be made as comfortable and attractive as possible, so that the dread of hospitalization and the aversion to segregation may be minimized and the people convinced that the sanitary service is acting for their good.

5. Trade, locomotion, traffic, personal liberty and rights, customs, local sentiments and even prejudices should be interfered with as little as is consistent with public safety, nevertheless all these things must be subordinated to public welfare. Yet care must be exercised to prevent rigid measures from causing concealment of cases—as these are pretty certain to become foci for the spread of disease and thus measures intended to suppress, become the means of disseminating the disease.

6. The question of appointing a number of “sanitary advisors,” throughout the country who should be physicians or other intelligent men in touch with the people and with local conditions; of giving to sanitary authorities direct police control; of the efficiency, or non-efficiency, of land quarantine, of the segregation of contacts, as well as many other questions are, in the opinion of the writer too large for discussion in this paper.

But the purpose of this paper will have been fulfilled, if its subject-matter serves to arouse interest or discussion; especially as our country may be confronted ere long by the problem of how to prevent the introduction of cholera from Europe.

THE INDIAN ARMY HOSPITAL CORPS.

THE government of India has approved a scheme of reorganization by which the twenty-six small companies of the Hospital Corps, hitherto in existence, are merged into eleven larger companies, one of which is to be attached to each division. The headquarters of each company is to be located at the headquarter station of each division,—the first to 10th companies with the similarly numbered divisions and the 11th at Aden,—the principal medical officer administering the company, which will be recruited in his territory.

THE EFFICIENCY OF THE ENLISTED MAN IN THE HOSPITAL CORPS, WITH PARTICULAR REFERENCE TO THE NATIONAL GUARD.

By MAJOR GEORGE MORRISON COATES,

PHILADELPHIA, PENNSYLVANIA,

SURGEON IN THE NATIONAL GUARD OF PENNSYLVANIA.

I FEEL some diffidence in presenting this short paper to the consideration of this distinguished assemblage, quite realizing that the subject has been well threshed out at different times and, to the Regular Army Medical officers especially, can be of but passing interest, at the most. To us of the National Guard, however, in our efforts to secure and retain a high degree of efficiency it is an ever present problem, oftentimes of difficult solution.

The question I wish to discuss briefly is this: Is the enlisted man in the Hospital Corps of the Army, Navy or National Guard the properly qualified and trained individual that he should be in order to satisfactorily perform the various duties calling for the exhibition of both skill and intellect for the relief of suffering and the saving of life, duties of much higher order and infinitely more in the interest of humanity than those of the private in the line?

Perhaps the most of us would agree that the average hospital corps man is not always, or even often, by nature or training possessed of these qualities in a high degree, though of course many are admirably fitted for their work. When I first entered National Guard work six years ago, the system was a most vicious one and the results were necessarily bad at least in the 1st Brigade of the Pennsylvania Division. There was no brigade or division organization of the Hospital Service though there was a separate organization of the Medical Department so far as applied to officers. Each regiment had its hospital corps of

12 men and a hospital steward with the rank of sergeant; and these twelve men were obtained by the detail of one man from each company the selection being made by the company commander in each case. The result was that the Hospital Corps, being regarded as a snap by the rank and file, was filled with the laziest and most worthless men in the ranks, men who were useless to the company and worse than useless to the Corps, who for the most part were only fit for the sink detail. In some of our regiments we were able to partially obviate this difficulty by choosing our men outside, persuading the captains to enlist them and turn them over to us; and in this way were able to do fairly respectable work. I have very little acquaintance with the old method in the Navy, but from observation during six months service in both northern and southern waters in '98, while holding a commission as Assistant Surgeon, U.S.N., it seems to me that the condition of affairs bore a very close resemblance to the Pennsylvania conditions that existed until a couple of years ago. The apothecaries, who compared to our hospital stewards, and who were obliged also to be licensed pharmacists, were for the most part good men; but the ordinary baymen, though recruited for this especial service, were often useless as far as actual nursing was concerned; and from enquiry among brother naval officers of this period I have found that to be the general consensus of opinion. In regard to the condition of affairs in the Army at that time I cannot speak.

Two years ago there was created in Pennsylvania an organization approximating the Hospital Corps of the regular Army and made separate from the regimental organization, but it has never been completely put into practice and there are numerous difficulties in the way where sixteen regiments are scattered over 45,000 square miles of territory during the whole year except for the one week of the annual encampment. The present practice, however, which is perhaps the best possible for a National Guard organization, is to let each surgeon recruit, tent and mess his own hospital corps and have entire charge of the men. In this way he can obtain the class of men he desires and can control them, while under the old order of things the worst

punishment he could inflict for a breach of discipline was to return the men to their companies and call for new details; with the discouraging prospect that after he had turned the unclean spirits out their places would be filled by "other spirits more evil than" themselves, and then truly "the last state of that [hospital corps] becometh worse than the first."

This brings me to the consideration of the individual, about whom there are varying opinions. Many surgeons feel that they obtain the best results with laymen pure and simple, men of some intelligence of course, but without special medical training. This training they supply by lectures and demonstrations during the winter months. They believe that better discipline is observed, better results in drill obtained and in general greater efficiency. In the country districts it seems evident that to a certain extent this plan must be followed; and if recruiting is done with care and conscientious instruction given, good results will follow. But in the large cities there is a greater field for selection and the medical student or hospital interne in my opinion, found upon actual experience, makes an army nurse of the very best type. We have tried the layman, the pharmacist, the hospital orderly, and the medical student; and the results from the latter have been in every way unqualifiedly the best. It has been sometimes claimed that men of this type are too independent to submit willingly to discipline, to do the ordinary routine work of camp and hospital tent and to carry a litter. My experience does not confirm this. If the men are enlisted during their first or second college year, care being taken to obtain men who will be personally congenial and not more than four from any one college class, we shall have a body one-third of whom will probably need recruiting each year as their class comes to graduation, but always leaving a majority of trained men to build the stability and efficiency of the corps upon. These men are earnest, willing and enthusiastic; they observe good discipline with proper treatment; they are trained in medical work, becoming more and more useful as their enlistment draws to a close, and in return get no inconsiderable benefit from the field emergency work and from the routine of the hospital tent. This they themselves recognize and

it is not an uncommon experience to have them re-enlist for another term when about to graduate, and to serve it out.

In the cities such material is easily obtained, and I think that the surgeon of the so-called country regiment—that is one whose companies are not all concentrated—might build up his hospital corps largely of men of this type; not perhaps the whole corps but he might be able to get enough medical men who would prove reliable in themselves and give character to the whole body, and in addition be constantly bringing him others of their own class, for I find in my own regiment that my men do most of my recruiting for me. They take a pride and interest in their work and when vacancies occur always have friends in the lower college classes whom they are anxious to have enlisted. By selecting the best of those presenting themselves we get a corps of men who are congenial and in great measure already accustomed to work together. We have at present a waiting list of at least five or six men anxious to join because they have friends in the corps. Now with men of this type little instruction is needed, comparatively speaking. They readily learn the drill and the details of their duties, and they are already being trained in the medical schools and hospitals to much greater professional efficiency than we can hope to accomplish by simple didactic lectures in the armory. We therefore can afford to make their armory work just enough to keep up their *esprit de corps* and to arrange it so that it may not interfere with studies and other duties. If the country regiment has enlisted such a corps of medical students they are quite available in the summer when the real work is to be done and usually at not infrequent intervals during the winter as well, when vacations occur. And there are such students at home in every little community the country over. A few lectures on camp sanitation, personal hygiene as applied to the soldier and military hygiene in general, will well equip them for their work when added to their regular studies.

And we have found that there is no trouble about their turning out for duty when called into active service. A national guard regiment is not often called into the field for more than a few weeks at a time; and the medical student as a rule is only

too glad of an opportunity to "go to the front," and the faculties of the medical schools do not seem to make objection. Indeed, in Pennsylvania and doubtless elsewhere, I suppose they would be amenable to the penalty of the law if they did. During the great coal strike of 1902 my hospital corps, recruited in this way, came out with prompt enthusiasm; and if there had been any defaulters they could have been readily replaced from among the applications for enlistment I received the day previous to our departure from Philadelphia. In fact, this class of recruits is able to get away from its studies quite as readily as the average mechanic or clerk can leave his employment at the call of the regiment. They will turn out when needed and I think there is no question that they will readily learn drill and discipline. Three years ago at our annual encampment, at Gettysburg, a hospital corps of this character, I believe attached to the 18th regiment located at Pittsburg, gave an exhibition drill that compared most favorably with that shown by the regular Army Hospital Corps sent us for our instruction; but it is only just to say that this Pittsburg corps was, at that time, at least, by far the best in the state. And who can say that men of the type composing that corps—students or practitioners of medicine—would not have been of infinitely more value in the field of battle or in the military hospital than the corps of laymen, however well instructed? Since then the corps of the 2nd Pennsylvania Regiment, of which I have the honor to be surgeon, composed in the same manner as this most admirable Pittsburg corps, has attained a high degree of efficiency in discipline and drill as well as in other qualities, due to the most excellent material which we have found can readily be obtained. During a brigade parade at our annual encampment, at Perkasio, this last July a man fell from the ranks with heat exhaustion. A squad from the corps, on signal, proceeded without an officer to the fallen man, took him to the ambulance and then to the hospital tent, going through the different steps of the required drill of their own motion and with such precision that the U.S. Army Medical Officer detailed by the War Department to inspect our medical service remarked that it "was a very pretty show" thinking it an arranged exhibition.

and being with some difficulty persuaded that it was simply a routine emergency call and that the men were entirely unaware that they were under the surveillance of an inspecting officer. And yet these same men had had very little practice in litter and ambulance drill during the preceding year. I mention this incident simply to show that men of this class can be depended upon to learn their drill readily and to stick to it even in routine work, certainly as well if not better than the men taken from the ranks or enlisted without regard to their medical qualifications. And it seems only to be expected that men of a high degree of intelligence will show these results and respond to training more satisfactorily than those from a lower rank in life. At the army manoeuvres at Manassas last September I had the opportunity of seeing the work of the regular army corps as well as those from the Guard of other states than my own, and to my own mind the foregoing observations were justified by the work done on the field at that time. However well instructed a man may be, and the instruction given the hospital corps must of necessity be superficial, nothing can take the place of actual experience, and the curriculum of the present day medical school contains practical instruction in surgery and medicine, diagnosis and treatment, that can never be given outside the clinical class-room. In the Army and Navy, of course men of this type cannot be obtained and might not prove of value under the rigid discipline necessary in the regular service; but in the National Guard, where the line is not relentlessly drawn between officer and private when the uniform is off, the case is a different one. The men must of course be handled with judgment, but their average good sense and intelligence will usually carry them safely through all squalls. The enlisted man of the Hospital Corps in the Army is, I believe given a course of instruction in schools for that purpose at Washington and elsewhere; and friends of mine, U.S. Army medical officers, tell me that very good results are obtained. That they are made most proficient in drill can be testified by anyone who has seen them at work, but as to their qualifications to act as nurses I am not informed. The course for a female trained nurse in the majority of training schools attached to our great

civil hospitals covers a full term of three years of practical and didactic work. Does the Hospital Corps private in the Army compare favorably with the graduate of these schools? I am seeking information on this point. His duties are just as important, or more so; but if it takes intelligent women of the class that are now taking up trained nursing as a profession three years to become qualified, is it possible to properly instruct our men in a mere fraction of that time? Could not the system be extended so that each Army hospital should have its training school modelled to some extent after our civil institutions which have proved their efficiency? If so, it would seem to present the hope of attracting young men of intelligence to the profession of an army nurse and in time building up a class of trained men that would be eminently useful. Many of these men would doubtless stay in the army, to the great relief and satisfaction of its medical officers; and it might be expected that those who scattered to other walks of life would to a considerable extent be available as a reserve in case of any sudden emergency like our Spanish War. The phenomenal success of the Japanese military surgeons in the handling of disease and wounds in the war now drawing to its close points a moral which no civilized nation ought to neglect; and the experience of the United States whenever its army has been called upon to take the field in actual warfare makes it a sacred duty of the Government to strengthen in every possible way the hands of the devoted and able men who compose its medical staff, upon whom depend to so large an extent not only the saving of life and the alleviation of suffering but the actual success of the fighting arm by the speedy return to the front of those who have been stricken and whom it is possible for the surgeon to send back to duty. The achievements of the Japanese Medical Department appeal, to us at least, as the most notable work of that curious and interesting people in their conflict with Russia; and this great American nation will be foolish and short-sighted if it does not take it to heart and give its own Army and Navy Medical Departments all that they require to show equally good practical results when the need comes. We have reason to be proud of our surgeons, let us try to see to

it that they are provided with what they need to do their work.

The problem is easier, perhaps, on shipboard than in the field, but there used to be much complaint that the ship surgeon was hampered in his work by lack of proper facilities. During the years that have elapsed since my own brief naval service the system has been changed to correspond with the Army establishment. The bayman is a thing of the past and the hospital corps private and hospital steward have taken his place. They are instructed in a school for that purpose in bandaging, fracture dressing, giving of hypodermic injections, use of thermometer, and in short, the rudiments of nursing; but do they get actual experience in sufficient measure? I make the enquiry with due humility, realizing there may be many objections of which I am ignorant to the suggestion of regular training schools for army and navy nurses; and that many older and vastly wiser heads than mine must have already studied the problem.

Our Pennsylvania system of tenting and messing together the men of each hospital corps has given excellent results. The hospital tent, medical officers' tents and those of the corps, are grouped at the left of the Colonel's line and separated from the rest of the regiment. The men have their own mess tent, cooking outfit and issue of rations, so that there is little tendency to stray from the immediate vicinity and they are always ready for duty. The ambulance driver is detailed from a company by request.

To summarize, the following conclusions are offered:

1. That the efficiency of the hospital corps private some years ago was far from satisfactory.
2. That under new methods of organization, training and selection the efficiency can be still further greatly increased.
3. That the medical student or practitioner, so far as the National Guard is concerned, makes a male army nurse vastly superior to the ordinary layman.
4. That the keeping of the hospital corps as a distinct unit, separate from the rest of the regiment both in armory and in camp, greatly increases its efficiency and maintains better discipline.
5. That in the organization of the medical department of

our state the hospital corps company of the regular Army has been approximated as closely as may be under existing conditions; but that in his ability to obtain trained men the National Guard surgeon has an especial advantage and ought to secure even better results from a scientific standpoint and equal precision in drill and equally good discipline.

DISCUSSION.

CAPTAIN MYLES STANDISH, M.V.M.—I have had an experience of twelve years and over enlisting Ambulance Corps men in Massachusetts. We had at that time a corps of sixty-eight men which was enlisted in one place. Twice during the time I had charge of this work I enlisted medical students in the Corps. It was a failure each time. Philadelphia has a very much larger medical school population than Boston, but if Major Coates were obliged to maintain a corps of sixty men in Philadelphia I fear he would find it impossible to get enough medical students to fill the organization, and he would soon discover that medical students and the ordinary enlisted man make an incompatible mixture. The medical student will not submit to the discipline necessary; is bored by the elementary instruction, and presently ceases to attend the drills regularly. They then lose interest; this reacts upon the other enlisted men, and finally the whole corps is demoralized. If it were possible to get men possessed of medical knowledge, it would be more comfortable for the officer, of course. However, by enlisting during the year three or four times as many men as are necessary and dropping by the wayside those who prove themselves unfitted, you can get a large corps and maintain efficient service and discipline.

LIEUTENANT COLONEL NATHAN S. JARVIS, N.G.N.Y.—During the War with Spain I enlisted 500 hospital corps men. I had some experiences with doctors, and medical students, and at first it struck me as an excellent scheme to take men who knew anatomy and minor surgery, and medical men. I enlisted between twenty-five and fifty doctors. In about one or two months I heard bad reports. The doctors were complete failures as hospital corps men. They were a nuisance, and I cooperated to secure the dishonorable discharge of one physician. Students haven't the time to take up this work. It seems at first that here is the best man, but again comes the question of discipline. These men will not yield themselves to the necessary discipline. In my own brigade in New York we had a lot of medical men but they usually proved failures. The corps was constantly changing. Few served their enlistment of five years. They may have more time in Philadelphia, and be more amenable to discipline than they are in New York. The hospital sergeant is a very important personage. If he is a good disciplinarian he can do wonders. They have an unfortunate regulation in New York state assigning the hospital steward to the regi-

mental staff. The hospital steward is, as a rule, one who knows nothing about pharmacy or first aid methods, and he does not maintain the discipline that a hospital sergeant would. We cannot get this condition in New York, and without a good hospital sergeant, we cannot get a good hospital corps.

LIEUTENANT COLONEL LEONARD B. ALMY, Conn. N.G.—I believe I am the father of the Connecticut National Guard hospital corps, and I found that the enlistment of clerks and mechanics, and intelligent young men who were told they would receive instruction in anatomy and minor surgery, worked remarkably well. These young men, who were taken from the ordinary walks of life, were willing to work because they could not obtain the instruction in any other way. The discipline was very good. In the Army during the Spanish war we had many medical men in the corps, and it was difficult to maintain the discipline necessary, because these medical men did not want to be classed with the ordinary hospital corps man. I therefore think it better to take men in ordinary walks of life, than medical men who think they know it all.

MAJOR EDGAR F. SOMMER, N.G. Ind.—My experience has been the same as that of Major Coates. I have a corps of eighty-five men in Indianapolis, and seventy-five per cent of my men are medical students, doctors and hospital internes. I have experienced no difficulty in explaining to them and having them thoroughly understand the difference between military and civil life.

MAJOR BUELL S. ROGERS, N.G. Ill.—If you have a mixed corps, the ordinary man and the student or doctor become as water and oil. The students form a faction, and the others also, and they are constantly trying to outdo each other in such a way as to constantly antagonize harmony. I have found that the average medical student is a poor hospital corps man unless he will come regularly for drills and instruction. The layman has proven himself far better. I think I have a sergeant who is far better than any medical student. I don't think it wise to mix the medical man with the layman as privates, if you wish harmony in your corps. Rivalry between students from various schools usually are antagonistic to each other.

SURGEON CHARLES F. STOKES, U.S.N.—We have a training school for hospital apprentices at Norfolk. The course is of several months duration.

MAJOR ARTHUR R. JARRETT, N.G.N.Y.—The opinions of the delegates seem to be somewhat divided on this question. The 13th Regiment of New York which I have the honor of being a member, has a corps of twenty-six men and a waiting list of four or five. We have in the corps a dentist, pharmacist, medical students, nurses, chemist, and those of other avocations, making a strong and well balanced corps. It must be borne in mind that owing to the limited time at our disposal it is necessary to have as intelligent body of men as can be found. Men of limited intellectual

ability are much harder to teach and do not apply themselves with the same interest.

Another point is that the man who works hard all day at manual labor is not much inclined to read up his lectures and is more or less inclined to let the lecture be sum and substance of his knowledge. Many other reasons may be cited why we prefer the class of men mentioned above, but the fact of our making the selection of men such as we have speaks well for the judgment of our surgeon, Major de Forest.

There are other questions outside of ability, that have a great deal to do with the success of the corps, and the question of *esprit de corps* is the most important; without that most of the work will go for naught. A man must have pride in his regiment and consider it an honor to serve the State; and when a man is imbued with that feeling it is much easier for him to learn, and a pleasanter duty for those that teach him.

These are a few reasons in my judgment, why the efficiency of the Service would be greatly enhanced by having the class of men described by me, in the Hospital Corps.

MAJOR GEORGE M. COATES, N.G. Pa.—Major Jarrett has the key to the situation when he says you have got to have the proper *esprit de corps*. Trained medical students must necessarily do better work than mechanics. We get good work out of them and they deserve good discipline.

BACILLURIA IN MALTA FEVER.

THE presence of typhoid bacilli in the urine of patients ill with that disease has gained great importance not only on account of its diagnostic value, but also on account of the measures necessitated thereby. In this connection the work just published by Horrocks and Kennedy of the Royal Army Medical Corps on Malta Fever also gains interest. These workers have isolated the micrococcus *melitensis* from the urine of thirteen patients ill with that disease; the germ responding to the usual tests, including the clump reaction. They have found the micrococcus in the urine as early as the fifteenth day and as late as the eighty-second day of the disease. But, as yet they have been unable to isolate the *m. melitensis* from the feces. Results of this positive character, taken in connection with the finding of the germ in goat's milk in Malta, and the possible casual relation of the bites of insects, give early promise of adequate prophylaxis. *Jour. Royal Army Med. Corps*.—CHARLES S. BUTLER.

TREATMENT OF INGUINAL ADENITIS.

BY GEORGE ROTHGANGER, M.D.,

SURGEON IN THE UNITED STATES NAVY.

IT is commonly thought that resolution in the enlargement of the inguino-femoral group of glands in the male is frequent. This opinion loses sight of the various causes of suppuration in these glands. Such cases may be placed into four groups:

(1) Those due to chancroid in which resolution is the exception; (2) Those in which the enlargement is due to gonorrhoea. In this group suppuration is rare; (3) The enlargement accompanying syphilis. Suppuration is not common. (4) In this group are to be placed cases non-venereal in origin. The number of cases that end in suppuration and resolution is about equal. The results in securing resolution in the second, third and fourth groups are considered as applying to the first group with the result that the patient is subjected to months of disability with his discharging sinuses.

Early removal of the diseased glands shows that the infection may lodge in the centre of the gland, be distributed throughout the parenchyma, or lodge at the periphery. In the bubo due to chancroid the formation of pus occurs rapidly so that in those cases in which the infection has lodged at the periphery, perforation of the gland occurs quickly and the surrounding tissue is infected. There is but one way to prevent the long months of suppuration which follow a chancroidal bubo. That is the removal of the diseased glands before the periglandular tissue is infected. Such removal ought to occur at the end of forty-eight hours if the gland has not begun to recede in that time. The signs of pus in the gland are slight rise of temperature, marked tenderness in the gland and especially progressive alteration of its shape. In my experience there have been only two cases in which enlargement of the inguino-femoral glands with a chan-

croid on the penis have not suppurated. Not once have I been disappointed in removing glands not containing pus, while I have waited too long a number of times. Even when primary union fails and the wound becomes chancroidal the process is easily destroyed in the open wound. There is no incapacity for many months with pus discharging from several openings from the various glands infected. The medical man who through early interference secures primary union in a chancroidal bubo does more than save his patient the long period of healing in a granulating wound. He saves other lymph glands from infection and destruction. In cases of double inguinal adenitis in which operation is delayed until the pus is under the skin a large number of the glands are infected and destroyed. Permanent oedema of the penis has followed in some of those cases.

In the second, third and fourth group of cases, there is not the same virulence in the infective material and therefore not the same urgency with regard to operation. To secure resolution tincture of iodine and mercurial ointment are without value. They have the great disadvantage of discoloring and irritating the skin, concealing its color and opening the way to infection. Iodoform injections I discarded years ago as without value. To me the most satisfactory application to secure resolution is the ice bag, which combines the two virtues of cold and pressure. In three or four days it is nearly always evident whether the glands will resolve or not. It is an error to think that pus is not present before the skin is reddened. When that occurs the pus has escaped from the gland into the surrounding tissue. If, in the process of removal of the gland, that structure ruptures and pus escapes, primary union may still be secured in the last three groups. In the chancroidal bubo I have always failed to secure such union when the pus escaped from the gland. In one case in which the gland was removed intact the wound became infected, probably from pus which was in the lymphatic.

The following is a synopsis of the cases treated by me on the U.S.S. *San Francisco* in 1902, 1903, and 1904, where I had an opportunity to follow the patients from the moment that they presented themselves.

NO.	SIDE.	CAUSE OF DISEASE	CHARACTER OF HEALING
1.	Left	Chancroid	Suppuration, Chancroidal
2.	Both	Non-venereal	Resolution
3.	Right	Chancroid	Suppuration
4.	Left	Non-venereal	Resolution
5.	Left	Chancroid	Primary
6.	Left	Chancroid	Suppuration, Chancroidal
7.	Right	Non-venereal	Primary
8.	Right	Chancroid	Suppuration
9.	Both	Chancroid	Suppuration
10.	Right	Syphilis	Primary, Pus in glands
11.	Right	Chancroid	Suppuration
12.	Left	Chancroid	Primary
13.	Left	Chancroid	Primary
14.	Right	Chancroid	Suppuration
15.	Right	Chancroid	Suppuration, Chancroidal
16.	Right	Chancroid	Primary
17.	Left	Chancroid	Suppuration
18.	Right	Syphilis	Primary. Pus in glands
19.	Right	Non-venereal	Primary
20.	Right	Chancroid	Primary
21.	Left	Chancroid	Suppuration, Chancroidal
22.	Right	Syphilis	Suppuration
23.	Right	Chancroid	Suppuration, Chancroidal
24.	Left	Chancroid	Primary
25.	Left	Chancroid	Suppuration
26.	Left	Syphilis	Primary. Pus in glands.
27.	Left	Syphilis	Primary. Pus in glands.
28.	Right	Chancroid	Suppuration.

In the cases of inguinal enlargement occurring as the result of chancroid primary union was secured in six while I failed in fourteen. In the suppuration of the initial enlargement of syphilis primary union was secured in four of the six cases. In the non-venereal group resolution occurred twice and in the two cases in which the glands suppurated dissection of the diseased glands resulted in primary union. It was only in the latter part of my work on the U.S.S. *San Francisco* that I saw that the bubo from chancroid resulted so uniformly in suppuration and therefore was to be met by early excision.

A CASE OF PERITONEAL WOUND.

By CAPTAIN WILLIAM H. WILSON,

ASSISTANT SURGEON IN THE UNITED STATES ARMY.

I WOULD like to make the following brief report of a case coming under my care, at this place, recently, for the interest of the members of the Association, as showing the apparent immunity against infection in an abdominal wound, in a Filipino, which, if it had occurred in a white man, would, no doubt, have resulted in death.

Erescemo Apelado, a native (Ilocano) Filipino, aged nine years, was trying to separate two carabao that were fighting, when one suddenly turned upon the boy, and gored him in the abdomen, causing a wound four inches long, two and one-half inches of it penetrating the abdomen, causing protrusion of two large knuckles of intestine about as large as my two fists, also some omentum. The accident happened some two or three miles from the post, and about two hours before his appearance at the hospital. On his arrival at the hospital, he was placed on the operating table, and on examination the wound as described above was found in the right inguinal region, the two large knuckles of bowel were protruding from the abdominal cavity, covered with a dirty piece of native cloth, the bowels already congested and covered with sand, and a portion of omentum, jagged and torn, was also protruding. The boy was given chloroform, and after thoroughly cleaning the bowel with normal salt solution and removing the sand it was placed within the abdominal cavity, the piece of omentum was ligated with catgut and excised, as it was badly torn and would, no doubt, have sloughed had it been left as it was.

The wound was then closed with three layers of sutures, one uniting the peritoneum, one the muscular layers, and one the skin, the two former being catgut and the last silk worm gut. No drainage was used. Sterilized dressing applied.

Three days later the boy was brought to hospital on a litter and the wound was healing nicely, temperature 100° . He was kept on milk and liquid diet for the first ten days, though after three or four days, the boy was asking for rice and the usual native food.

There was found upon removal of the first dressing a very small amount of pus in the superficial layers, temperature $99\frac{1}{4}^{\circ}$. Three days later the wound had healed, the tenth day, stitches were removed. and since then he

has had an uninterrupted recovery, and today just after thirty days from the occurrence of the injury I have discharged the case as cured.

After seeing the case the first day, I gave a very grave prognosis, saying that he would get septic peritonitis and die in three or four days, and I was consequently agreeably surprised to see him each dressing day looking and feeling better, until now, he has entirely recovered.

I make report of this case chiefly to show what some people can stand without getting septic peritonitis where a dirty carabao's horn had entered the abdomen, the bowels covered with sand and enclosed in a dirty piece of native cloth for two hours before receiving proper surgical attention; and I firmly believe, had this occurred in an American soldier or child, death would have resulted beyond any doubt from purulent peritonitis.

The lesson to be gained from this case, is, that we should always do our best in the way of treatment of any case, no matter how hopeless it seems, as the proper surgical and aseptic treatment should save many cases apparently in death's grasp.

MOSQUITO SCREENS AS USED BY THE JAPANESE ARMY IN MANCHURIA.

DURING the last campaign in Manchuria says *Le Caducée* the Japanese took advantage of recent methods of prophylaxis against malaria and its spread. Where troops were in cantonments for some time, not only were marshy areas drained dry, but all windows of occupied houses were almost always covered with gauze or netting, and doors were protected as well. In this way the plague of flies as well as of mosquitoes was partly prevented. Besides this, however, each soldier and officer was provided with an individual mosquito net or screen to protect the head. This was found very useful. It was constructed of two steel rings kept apart by a spring, and covered except at the bottom with cheap gauze. After the screen was slipped over the head the bottom was closed comfortably about the neck by a rubber band, and allowed easy movement of the head. One disadvantage of this head apparel is that it is warm for summer when of most value in use.—CHARLES S. BUTLER.

A VIRULENT OUTBREAK OF TUBERCULOSIS IN A GURKHA REGIMENT.

By COLONEL HENRY HAMILTON, C.B., I.M.S.,
PRINCIPAL MEDICAL OFFICER, LAHORE DISTRICT.

I WISH to describe very briefly a virulent outbreak of tuberculosis in a Gurkha regiment which I think interesting and instructive. Readers of the JOURNAL have been made familiar with the name of Gurkha through the terrible earthquake that on the 4th of April last overwhelmed the neighboring cantonment of Dharmasala, but it is very improbable that they have heard that in the cantonment of which I now write, namely Bakleh, some thirty miles distant, the tubercle bacillus in the course of two or three years had lost to the Indian Government the services of many more brave soldiers than the earthquake at the former station.

The Gurkha is an inhabitant of the independent state of Nepal, a little parallelogram in the Himalayas under the shadow of the mightiest mountains in the world. He is quite different from all the other inhabitants of India being of the tartar type. He resembles very much the Japanese—the photographs one sees of the Japanese generals might be those of Gurkha officers in our service. He is a splendid soldier and is beloved by his officers.

Bakleh is a small station in the Himalayas at an elevation of 4,500 feet on the top of a ridge with a fairly abundant growth of the *pinus longifolius*, intended by nature to be a sanitarium.

For some years there had been a small number of cases of tubercle among the Gurkhas but in the year 1898 there were 25 admissions in the two battalions of the regiment (the 4th Gurkhas).

For three years after this there were 35 cases each year but in 1902 the admissions ran up to 64, and in 1903 they reached the enormous total of 257. All this excited a good deal of atten-

tion and there was much discussion on the subject and many recommendations were made but so far nothing further was done.

About this time I came to the district as Principal Medical Officer and like all my predecessors was much struck by the seriousness of the situation. In August, 1903, I made an official visit to the station. There were under treatment about 70 men in all stages of the disease. I found the young medical officer, Lieutenant Norman Scott, I.M.S., with a thorough grip on the situation. He had evidently been indefatigable in ferreting out the incipient cases and knew the history, physical signs, and progress of each case. With the exception of those who were hopelessly ill and required constant care in hospital he had all his patients in open drill sheds admirably suited for the treatment of the tuberculous.

I went round the lines to see what was at the bottom of this terrible state of affairs. I saw what had been already pointed out—want of cubic space, want of ventilation, want of light inside the rooms—many barracks faultily placed so that they got little or no direct sun and had their foundations always damp in the rainy seasons. I went up to one quarter where I saw a good number of children and enquired how many people lived in it. I was told there were the father and mother and five children all living and cooking in the same room. This room, judging roughly by the eye, was 8 x 8 x 8 feet and had one opening not quite 4 x 4 inches for ventilation and no chimney. All the floors were of mud and the walls were plastered with mud.

The conclusion I came to as the result of my inspection was that the first thing to do was to evacuate the place absolutely and accordingly I recommended that this should be done as a preliminary to the other measures. This met with a good deal of opposition but was eventually carried out. At once the next important step was taken,—the invaliding out of the service of all the infected. In the course of the next few months about 200 men were invalided. The government behaved very generously towards them assigning pensions in each case as if they had been wounded in battle. Apart from the justice of this such generos-

ity was the best policy for many of these men would undoubtedly largely recover their health in their villages and remain as evidence of the justice and beneficence of the great Sirkar, and instead of the outbreak hindering recruiting it would promote it.

The station was evacuated in November 1903 and the invalids dispersed as soon as possible. It remained empty till the following July when the troops returned for the rainy season. It was practically evacuated again in October and remained so till March of this year. Meantime the necessary measures were taken in hand—the barracks were disinfected with chlorinated lime, the only effective disinfectant for the tubercle bacillus, the earth of the floors was dug up and removed, new barracks were built, ridge and eaves ventilation was introduced, more windows were put in, new cook houses were built, the partition walls in the quarters mentioned above were knocked down and they were made over to unmarried men with ample space and ventilation. Further a good water supply has been introduced. This makes personal cleanliness more easily accomplished and makes the growing of vegetables possible.

All that is required has not yet been done but the results already have exceeded the most sanguine expectations. Since the return of the troops there has not been a single case of tubercle in Bakleh and there is not a man, woman or child in it now suffering from the disease.

One of the chief arguments used to prove that it was hopeless to radically improve Bakleh was that the Gurkhas themselves in their own villages were highly tuberculous and that we imported tuberculous recruits. This I, from my previous experience of Gurkhas, did not believe. I had been medical officer to another Gurkha regiment where the barracks were even worse than those at Bakleh and yet there never was an outbreak of tuberculosis (I reported so badly on them that they were knocked down fortunately before this occurred). I enquired whether there was any man suffering from tuberculosis in Bakleh or Dharmasala under one year's service and the answer was in the negative. That Gurkhas suffer from tuberculosis I do not attempt

to deny but I do deny that they are exceptionally liable to it and I assert that if any military community of ours were called on to live in anything approaching the unhygienic conditions that prevailed in Almora and Bakleh it would be wiped out by tuberculosis in a short space of time. The conditions as I reported at the time in both cases were relics of the presanitary age.

It is sad to relate that the scientific young officer to whom more than any one else Bakleh owes its salvation became a martyr himself to the cause he had so much at heart. Lieutenant Scott asked to have his chest examined and it was found that the apices of both lungs were affected. He was of course at once removed from the place and afterwards was sent to Nordrach where I am glad to say he has made a good recovery according to the last account I had from him.

RESULTS IN THE TREATMENT OF TYPHOID IN THE GERMAN ARMY.

THE comparative value of different methods of treating typhoid fever in Military Hospitals is well brought out in an article of Dr. Simonin, in *Le Caducée*. He has made use of an instructive table covering the results for the past eight years in the German army, under different modes of treatment, including 7,685 cases of the fever. There are wide variations in mortality in the several services; from 1.2 per cent, with the Brand method rigorously used to 28.5 per cent with warm baths and febrifuges used; and, no other indication is given as to whether the epidemic was mild or severe.

Nevertheless, the results obtained as shown by these detailed statistics of the German army from 1894 to 1902 prove the success of cold hydrotherapy in treating typhoid in military hospitals. Thus in a total of 650 cases, under the Brand method strictly applied, there were thirty-eight deaths; a mortality of 5.8 per cent. In the series of 4,526 cases, where cold baths, modified according to circumstances in each case, were used there were 405 deaths, a mortality of 8.9 per cent. This last closely agrees with the universal statistics of typhoid mortality.—CHAS. S. BUTLER.

Contemporary Comment.

WOUNDS BY ARTILLERY PROJECTILES, HAND GRENADES AND LAND MINES IN THE WAR IN MANCHURIA.*

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TRANSLATED BY MAJOR CHARLES WILLCOX,
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WHILE we have some very clear knowledge of the wounding effect of small arms due to the experiments and the facts furnished by the most recent wars, we are less enlightened on the destructive power of artillery projectiles. Our knowledge of this subject is based, in the greatest measure, on the experience of our Japanese naval confreres during the war of 1894-1895, between their country and China. It would be interesting to confirm the views of the very instructive book of Drs. Saneyoshi and Suzuki by experiences during the Russo-Japanese naval fighting. But the time has not come for doing this, for since the *Sei-I-Kwai Medical Journal* of last year published statistics of Japanese officers and men killed and wounded before Port Arthur from February 9 to October 1, 1904, it seems that the orders to keep absolutely silent on all military and naval matters have been extended to the surgical domain. The past, always a guarantee of the future, allows us to hope that our scientific curiosity will some day or other be satisfied.

From statistics that have been published it appears that in a total of 2,321 victims, 1,022 were killed, 88 died from some un-

*Translated under the direction of the Military Information Division of the General Staff of the United States Army from *Le Caducée*.

known cause, 556 were severely and 855 slightly wounded. In the absence of further information it is not possible to separate those wounded by the action of submarine mines or other causes at sea from those killed by firearms, nor can we separate those wounds made by projectiles on sea and land, and the ordinary every day accidental wounds.

However this may be, adversaries in the conditions of actual sea warfare appear to endeavor to put the vessels themselves hors-du-combat, rather than to destroy the crews. They fire immense piercing shells at the greatest possible range, smaller explosive shells being reserved to repel attacks of torpedo boats.

According to Dr. Totsuka, director of the naval hospital at Sasebo, wounds received during sea fights result for the most part from the explosion of shells, sometimes from contact of the projectile itself. They are generally multiple. In the case of thirty-six wounded he counted sixty-two wounds, excoriations and light burns being neglected. Of these wounds, some were noticeable on account of their small size, the opening in the skin presenting the dimensions of a pea, some on the other hand mutilated entire limbs. In the latter cases it was a question of burns; abrasions, contusions, large wounds with loss of substance and discharging wounds. These last, however, are exceptional; the force of explosion being feeble relatively to the surface of contact, explains why this is so.

Looking at the course of these wounds from exploding shells, it is proper to point out the phenomena of infection that make them worse. On their arrival at the hospital at Sasebo, writes Totsuka,* four or five days after receiving their wounds, the patients had passed through the primary period of wounds: all hemorrhages had ceased; the tissues that had been crushed by shells had begun to be gangrenous, and inflammatory reaction appeared around the edges of the wounds. Some wounds with great loss of substance had their surface covered, not with healthy granulations, but with a grayish putrid matter. Wounds that had been sutured had commenced to unite in places but in

*K. Totsuka, *Sei-I-Kwai Med. Journ.*, May 31, 1904, p. 66, and *JOURNAL OF THE MILITARY SURGEONS*, October, 1905.

most cases the surrounding area was red and swollen and pus was escaping at different points. Small contused and punctured wounds were filled with clots and appeared to be in process of healing without inflammation or suppuration. On the other hand from larger wounds there was an abundant oozing of a dark red serum that soaked through the dressings. Some of these wounds were suppurating and gave off a foul odor. In the case of wounds from which foreign bodies and shell fragments had already been extracted, there were still removed pieces of clothing and splinters of bone during the days following admission to the hospital.

The morale of the wounded was perfect; all except those with fractures were free from pain; their appetite was normal; and while in some cases of severely wounded the thermometer registered from 39° to 39.5° (Cent.) in the majority of cases it scarcely reached 38°.

With the great care in following small details, that more than anything else characterizes Japanese surgery, wounds with clean surfaces and borders were simply dried with compresses soaked in sterilized water and then dressed with sterile gauze. If the wound was suppurating, or gave off an ill-smelling discharge, or if it was a complication of a fracture, it was washed with a 1-3000 solution of bichloride of mercury and covered with iodoform gauze or boro-salicylic powder. A most careful examination with a view of discovering fragments of shell, foreign bodies, and fractured bones was always made, except when the use of radiography was indicated in which cases the technical details were failing in the practice of our confreres.

The results obtained were satisfactory; little blind openings and perforations similar to those produced by small rifle bullets, healing in two or three weeks without suppuration. Wounds as large as the palm of the hand, and those even larger, but with no fractures or loss of substance, generally cicatrized without any inflammation and healed by granulation after any dead tissue had been cast off. Nevertheless, in some cases, suppuration was abundant and the cure slow; this because of the presence of frag-

ments of clothing or splinters of shell in the wounds. All fractures were treated conservatively.

Of thirty-six wounded under the care of Dr. Totsuka, four died. One with wounds of both popliteal arteries arrived with gangrene of the left leg, the right leg cold and without sensation, and his general condition contraindicated any operation. A second had submitted to an amputation of the left leg; he had also a contusion of the first metatarsal bone, an extensive laceration of the posterior face of his left thigh and many wounds of the head. He was thoroughly infected and succumbed at the end of six days. The third wounded man showed a wound the size of the little finger just behind the right lower jaw and it was thought the projectile had been arrested in the neighborhood of the vertebral column, after having perforated the pharynx (bloody expectoration, dysphagia, very foul breath, and sharp pain in the neck). He developed a paralysis of the upper and lower left limbs and the autopsy showed that a fragment of shell, after having perforated the epiglottis and the third cervical vertebra, had injured the left side of the cord. A septic pneumonia was the cause of the fourth death, the wounded man having lost a great part of his right arm and having a comminuted fracture of the upper end of the left femur.

This mortality of four out of thirty-six, or one in nine, should not, we believe, be considered an index of the true general results. If the total deaths given in the Japanese statistics should not be attributed to the action of projectiles at sea it is well to note the large proportion of wounded, called severely wounded, 556, as against 655 slightly wounded. Moreover a factor that renders the prognosis more unfavorable is the fact that in addition to the grave anatomical lesions, those wounded by exploding shells showed a condition of infection that also tested the judgment of the surgeons.

We are without information to enable us to judge the question of burns from exploding shells at sea, a question that in the Chinese-Japanese War was presented with such immense import that the doing away with all inflammatory material on board vessels was the result. In the same manner reports have not been received

telling of "accidents of intoxication from gases," due to the explosion of the bursting charge of shells, or yet of the charge for firing. Concerning this subject, we should never forget the interesting publications of two of our marine comrades; Chief Surgeon Valence* has given a description of the phenomena of poisoning observed among the crew of the *Forbin*, due to the explosion of a magazine of three cartridges out of 133 powder (B), following the bursting against the bridge of the vessel of two shells (charged also with black powder) and the more or less complete fusion of a certain number of the same cartridges. The question of dangers of poisoning by gas due to the explosion of a shell in a more or less closed space merits attention, and it is the same with the analogous dangers that gunners in turrets run, when the gases contained in the gun escape backward at the time the breech is opened for reloading. Chief Surgeon Torel†, has clearly set forth the importance of this fact, not only from the standpoint of the pathogeny and therapy of accidents, but more from the reason for strong ventilation of the turrets during fire, that he points out to inventors. According to Torel the pathogeny of this intoxication is to be attributed in the latter case as much to nitrous vapors as carbon-monoxide, this gas being present in great amount in the products of combustion of powder. This fact, as well as the proper indications for treatment will without doubt be clearly set forth by the observations that have been made during the last naval fights. Furthermore this question is of equal interest to military surgeons on account of the use of explosive shells against dwellings, and the fire from turrets that are used on land as well as at sea.

The war in the Orient shows once more that, whatever may be the intensity of fire, two determined adversaries will, in spite of greater rapidity and perhaps even of greater accuracy of actual marksmanship, come to a hand to hand fight. The Japanese Army of General Oku for the period from April 24 to November 17, 1904 shows in its statistics of 21,180 wounded, a proportion of seven per cent who were wounded by weapons

*Valence—*Arch. de Med. Navale*, Juillet, 1904.

†Torel—*Arch. de Med. Navale*, 1903, p. 373.

other than fire-arms, and from the reports rendered by the Russian surgeons the proportion of those so wounded would appear to be the same as those wounded by artillery projectiles. It is in fact to be noted that the wounding effect of artillery has scarcely progressed in spite of the importance given to this arm of the service. The Japanese show a proportion of eight per cent wounded by artillery, while those wounded by small arm fire reached eighty-five per cent, and according to a Russian surgeon, Dr. Ilgin, who after the battle of Liao-Yang had occasion to examine 1,170 wounded, the proportion was eighty-six per cent from small arms and thirteen per cent from artillery.

At Wagram, they tell us that having fired 96,000 rounds from their cannon the artillerymen did not think that the injury they caused was in keeping with their expenditure of projectiles. Will it be the same in our day? Coming statistics will enable us to answer.

Lack of sufficient and of accurate data prevents our adding anything to the description of wounds caused by artillery given before the Military Medical Section of the International Congress of 1900. Some pages of Makins* and Haga† have confirmed what we have said, but it remains for our colleagues of the belligerent armies to throw light on the question with all desirable fulness and strictness regarding facts.

The principal Japanese artillery projectile is, according to the *Militär Wochenblatt*, shrapnel, the balls of which after an explosion at 2,500 metres are effective for 300 metres further. On the other hand this shrapnel may be exploded at fifty metres from the gun's muzzle and act as case shot.

The rapidity of fire is at its maximum ten shots per minute, and when aiming is required after each shot it is four or five.

Japanese shrapnel when it explodes in the air, produces a marked impression, "the wicked blast that thunders in the air, the flaming explosion, the whistling and the striking of balls on the ground cannot but upset the strongest nerves" writes a correspondent of the *Novie Vremia*. It is the same with explos-

*Makins—Surgical Experiences in South Africa, 1899-1900.

†Haga—*Arch. f. Klin. Chirurg.*, t. 71. 1904.

ive shells charged with shimose, an explosive similar to melanite. "The effect produced seems frightful, a tremendous detonation, a cloud of dust and a column of black smoke, one would think that not a man would be seen standing after the smoke and dust had cleared."

The moral effect of heavy artillery used in open country is especially great. After the time of the attempt on Cha-Ho, the Japanese brought to Port Arthur their siege guns (firing bursting shells of twenty-one centimeters) and put them to use. A Russian officer, according to the *Rousskii Invalid* writes "these cannon did not cause great damage, for it was very difficult at a distance of many thousand mètres to place their shells exactly on the lines of shallow trenches, but they produced a moral effect on the troops and it required some time for them to become accustomed to these guns."

To the moral effect of artillery shells, that we have carefully studied of old*, has been added in actual warfare that of hand grenades, land mines and even torpedoes.

During the siege of Port Arthur, General Kondratenko, whose death in a casemate shows that bursting shells have not a moral effect alone, made use of Whitehead marine torpedoes, fired by means of the tubes on torpedo boats. This terrestrial torpedo is not a thoroughly perfected projectile; its range about sixty mètres, only makes it dangerous for assailants who have come in great crowds to the very foot of the trenches. Can our Japanese colleagues enlighten us on the injuries caused by the metallic fragments and the body of gas from bursting torpedoes?

Another makeshift projectile, the hand grenade used in assaults, is but "the old renewed." Nevertheless, they say that, as a result of the service given by these grenades it is possible that their use will be tried and regulated in the future. Thrown a distance of thirty or more mètres they fall in a trench where the enemy is protected from bullets, or again they burst in the middle of a party of attackers. The outer covering bursts in fragments varying in size from a pea to a bean and the effect of

*Nimier et Laval—*Les projectiles des armes de guerre*, Alcan, 1899.

these little projectiles is added to that of the gas caused by the explosion.

The following are some remarks of the *Rousskii Invalid* on these hand grenades: The unexploded cases of shrapnel (Robin Shells) are collected; these weigh about three pounds and have an interior chamber about six centimeters in diameter and twenty in length. In each of these are placed two pyroxylin cartridges to which is attached a fulminate cap that ends in a piece of Bickford fuse; this is securely fastened in by a wooden stopper pierced by a hole for the passage of the fuse. The length of the latter, from twelve to fifteen centimeters, is calculated so as to burn in six or seven seconds; one for lighting and throwing, four for its flight through the air, and one or two only after its fall so that the enemy may not have time to get the projectile and hurl it back. The fuse is ignited either by a match or a piece of punk.

We copy from *La France Militaire* the description given by the *Kriegstechnische Zeitschrift* of earth mines and their use by the Russians.

Russian Regulations designate as "land mines" small charges of an explosive (up to sixteen kilograms), powder, pyroxylin, etc., placed in wooden or metallic cases under the surface of the ground at a depth varying from 1.40 to two mètres. The effect of these mines is more a moral than a material one, except in those cases where they are placed in rocky regions or planted with broken stones; pyroxylin has less effect than powder but is more easily employed.

The electric appliance used for firing these mines permits the explosion of groups of from ten to twenty according to distance. There are also automatic firing appliances, causing an explosion at the time the enemy passes over the mines.

In campaigns in the field, mines are generally placed at 200 paces in front of the line of defense, and are arranged in two distinct lines forty or fifty paces apart; in each line mines are from ten to twelve paces from one another. Care must be taken to place the electricity conductors one mètre under ground so that there is no risk of their being broken by projectiles. In the case of automatic firing apparatus a commutator is placed on the con-

ducting line, allowing the mines to be rendered harmless, if one wishes to cross the terrain or to remove the mines.

A body of thirty-two sappers and forty-five assistants can install in four or five hours two groups of ten mines each, as well as the connections for electrical firing at 200 paces.

The effect of these mines is far from being as fatal as they have been said to be; entire battalions have never been exterminated by their explosion; but their moral effect is great.

Fougasses loaded with rocks might give greater results. They are charged with from eight to thirty-two kilograms of pyroxylin; a charge of twenty-five kilos will hurl rocks 300 yards in the air and scatter them around a radius of 120. But fougasses require a longer time and are more difficult to make and are much more easily avoided by the enemy; they are therefore employed much less than the ordinary earth mines.

The Russians employed fougasses and small earth mines extensively during the siege operations. They are used to advantage in defending the outer positions and the advance works of Port Arthur. These mines were generally placed at 300 or 400 paces from the works in two lines parallel 100 paces apart.

Yet, the forts at Port Arthur should for defence have been augmented by a close system of fixed mines, made in narrow galleries at a depth of 6m.50 and pushed out from the salients for a distance of sixty-five mètres. From these base lines wainscotted branches should have been established according to the needs arising.

So, in spite of the progress made, the struggle between the artilleryman and the sapper is not included. The siege of Port Arthur has just shown the correctness of the views of the partisans of mine and shovel. We should not therefore be disinterested in those "accidents due to mine warfare," wounds from the explosion, from gunfire, and the results of intoxication (from gases). The latter have been elucidated in *Le Caducée* by our comrade Favier*, and we ourselves† have discussed the question from facts previously published. The dearly bought experience of our Japanese and Russian colleagues should throw light on the subject.

*Favier—*Le Caducée*, 7 Juin 1902.

†Nimier et Laval—*Les Explosifs, les poudres*. Alcan, 1899.

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Editorial Expression.

THE RUSSIAN ARMY KITCHEN CARTS.

THE kitchen carts of the Russian army during the recent hostilities in Manchuria, inspired more favorable comment than any other feature of that service. With the long continued engagements and the wretched roads, only the mobile field kitchen permitted the possibility of furnishing dinner and supper to the men in proper time. Thanks to these, hot food could be distributed during action to the troops even of the first line. The kitchen carts of each regiment were posted on the line of the reserves where the aid station was also located. From here food was taken in tonnelets which were carried on pack saddles. On the days of actual fighting, the hot repast alone consisted of a pound to a pound and a half of food, which was distributed at nightfall.

The Russian army had two models of wheeled field kitchens, one called the infantry and artillery cart, and the other called the cavalry cart. Both are drawn by two horses, but one animal can be made to suffice for the cavalry cart. The infantry kitchen cart is adapted for a company of from 200 to 230 men; that of the cavalry for a squadron of from 130 to 135 men. Beside the boiler and the fire pot, they include a forward chest for the transportation of a day's food for the strength of their command, three days supply of grain and two of hay for two horses, as well as the cooking utensils and enough fuel for one meal. According to the Russian scheme, the contents are packed in a rectangular wooden chest, divided into several compartments, which serves as the seat of the driver. In the infantry kitchen, the chest is divided into six compartments,—accommodating (1) the fire-wood—the fire box under the boiler and the metal pannier behind the chest may also be used; (2) lined with zinc plates and

designed for the preservation of the food for breakfast or the cooked and boned food for dinner, when it is necessary to take it out of the boiler to prevent its being over-cooked; (3) three days forage for two horses, and below in a large sack, a half ration of grits and other analogous cereals; (4, 5 and 6) salt, seasoning for the day, butcher knife, screw driver, oil can, the driver's effects, etc. In the upper part of 3, 4 and 5 and fixed by straps, a saw, hatchet and various other utensils find a place.

In the cavalry cart to four compartments the right hand side, zinc lining, for the sils; (4) for the forage, driver's effects, etc. Behind the

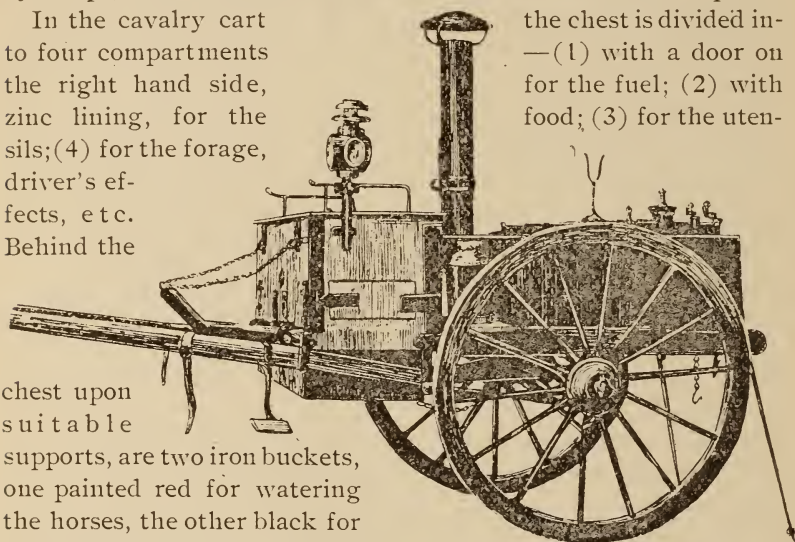
the chest is divided in—(1) with a door on for the fuel; (2) with food; (3) for the uten-

chest upon suitable supports, are two iron buckets, one painted red for watering the horses, the other black for cooking-water and the like.

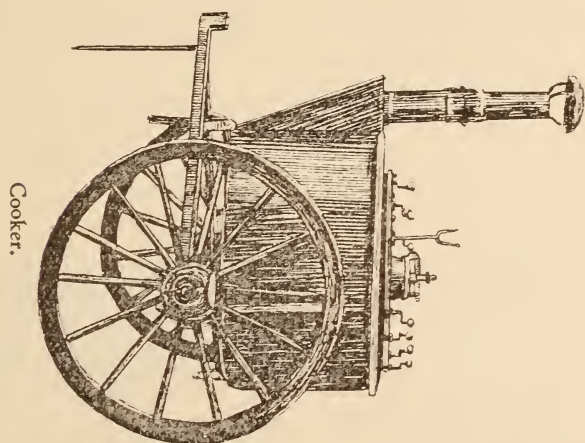
In each of them a sack of grain is placed when en route.

The provisions for the first cooking, that is, the half of the ration transported, with the exception of seasoning, are placed at one time in the cooker. The kitchens are designed for the preparation of liquid food (soup), and hot drinks (coffee or tea). For this purpose the copper boiler is filled with six bucketfuls, about twenty gallons, for a hundred men, a mark indicating the point which must not be passed if space is allowed for boiling. After having placed the necessary ingredients for the preparation of soup, the boiler is closed.

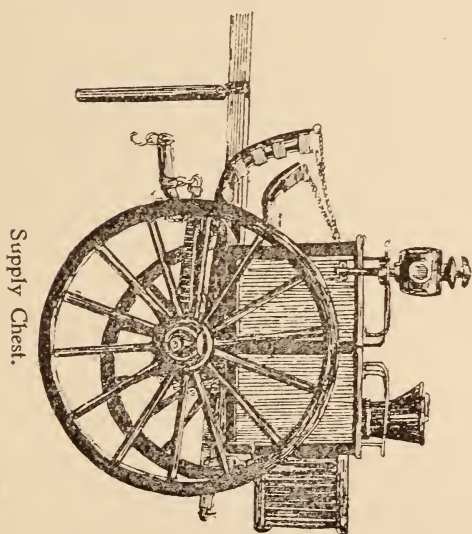
The cooker is well shown in the illustrations and consists of



Kitchen Cart for Cavalry.



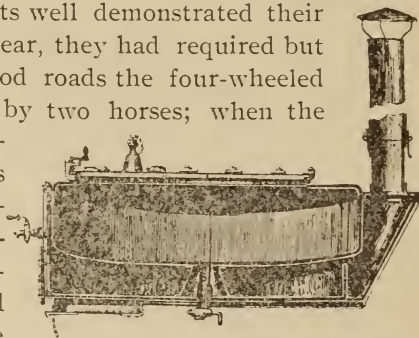
Cooker.



Supply Chest.

a boiler with a suitable fire pot underneath and a smoke stack of the knock-down variety. It has a hinged cover and in the cover is a second opening provided with a suitable cap, through which soup may be stirred, seasoned or otherwise treated during cooking without removing the top.

The Russian kitchen carts well demonstrated their solidity, for, at the end of a year, they had required but insignificant repairs. On good roads the four-wheeled kitchens were easily drawn by two horses; when the roads were bad, it was necessary to add additional teams or use the two-wheeled vehicles. Beyond question, declares a high military authority, the kitchen cart should be made a regular part of the equipment of each company or administrative unit, rather than a part of the reserve.



Horizontal Section of the Cooker.

Experiments have been made from time to time, on the preparation of food in individual dishes, but this procedure must be regarded always as an evil, and only sometimes necessary. It makes the men forage for wood and vegetables, and requires constant supervision, so that the men may really collect the food; and finally it needs a much larger quantity of provisions, wood and time. Individual cooking utensils have been found especially useful however in the preparation of tea.

A MEDAL OF HONOR FOR A MEDICAL OFFICER.

IT was an emphatic endorsement of the position of this Association that heroism is as frequent a characteristic of the service of medical officers as of any other class of military men, that the first medal of honor to be presented under the new regulations providing for a personal presentation by the President of the United States himself, should have been conferred upon a medical officer.

On Wednesday, January 10th, at the White House, in the presence of a brilliant assemblage of military and naval officers, the members of the legislative council of the American Medical Association, and others, the Secretary of War formally presented to the Commander-in-Chief, Captain James Robb Church of the Army Medical Department, formerly Assistant Surgeon of the first United States Volunteer Cavalry, stating that, he "had been recommended for a medal of honor for distinguished gallantry and for service other than that directly called for in the line of his duty," calling attention to the fact that General Leonard Wood, then Colonel of the "Rough Riders," and the President himself, both as lieutenant colonel and colonel of the regiment, had recommended that the honor be conferred upon Captain Church. The Secretary then read from the official records, quoting both General Wood and the President. The former reported to the War Department that—

"During the heat of the action Dr. Church came on the firing line repeatedly, and, in addition to giving the necessary surgical assistance, took some five of the men on his back and carried them, under a very heavy fire and with greatest exposure to himself, to the rear. His services might have been legitimately considered ended for the time being in giving them the best possible surgical aid and such assistance as he could render on the spot, but in addition to this he performed the duty above specified, carrying the men several hundred yards over an elevated ridge in the open, displaying, in doing so, the greatest gallantry and disregard of his own life, in his efforts to remove the wounded men to a position of safety where greater assistance could be furnished them."

Upon the conclusion of the introduction by Secretary Taft, President Roosevelt formally conferred the medal upon Captain Church, remarking, "Captain Church: There is no distinction which confers greater honor upon any American in military or civil life than this—the one honor coveted above all others by every man in the military service of the United States. It was my good fortune as colonel of the regiment in which you served to be an eye witness to your gallantry and to bear testimony to

it by letter to the proper authorities, stating the reasons why I deemed that you were entitled to this medal of honor. I wish to state, Mr. Secretary, that the letters which I wrote were written before I was President. Since I was President I have held no communication whatsoever with the military authorities on the subject. Captain Church, there could be no greater pleasure than that I now experience in handing to my old comrade and friend this medal of honor," and, grasping Captain Church by the hand, he continued, "there is no greater comradeship than that which comes from having lived in the trenches together."

THE PRESIDENT ON MILITARY MEDICAL CONDITIONS AND NECESSITIES.

AFTER the decoration of Captain Church, the President received the legislative committee of the American Medical Association, and remarked:

"Gentlemen: I want to say just a word of greeting to you and to ask your influence in behalf of the Medical Corps, not only of the Army, but of the Navy. There is not a more exacting profession; there is not a profession which makes greater demand upon those following it and which more entitles them to the gratitude of mankind than is the profession which is yours. The Army surgeon has to combine the work of your profession with the work of the military men of the line. In saying that I want to call your attention to two specific things—one thing that is now being done by men of your profession and one need of men of your profession.

"First, the thing that is being done. All the United States is the debtor to the medical men who have accomplished such remarkable work on the Isthmus of Panama. You hear very loose talk about making the dirt fly in Panama. Before making the dirt fly it was necessary to get the microbes under, it was necessary to grapple with the mosquitoes, necessary to eradicate disease. That has been done to perfection. We have had the foundation laid for that wonderful piece of constructive engineering work, to dig the giant canal. Too much praise cannot be given to those who have done this work in Panama.

“So much for tribute to your compeers. Now as to the need of your compeers. You recollect the complaint made about hygienic conditions during the war with Spain. Complaints were made that the troops were not properly treated, etc. The blame rested not on any man then in office, but upon our people as a whole, who had declined through their representatives to make provision long in advance for meeting such a need. If we had a war break out to-morrow and had to raise any large army there would be an immediate breakdown in the medical department simply because at present our medical corps is numerically only fit to take care of about forty per cent of the regular Army as it is now. The Medical Corps is not numerically fit to grapple with a campaign in which our whole Army as it is, the little Army as it is, should be employed. And, of course, if we had to mobilize an army of volunteers, we would under present conditions have to count upon widespread disaster through the shortcomings in the medical and sanitary and hygienic arrangements rendered inevitable by our present lack of preparation.

“The Japanese have given us a good lesson in this, as in many other particulars, by the way they handled their army in the recent war. One of the reasons why their medical department did well—the main reason—was the fact that they had an ample supply of doctors who had been practiced in time of peace in doing the duties they would have to do in war. And until we have provision for an ample corps of doctors in the army, so that they can be practised in time of peace, we will not have prepared as we ought to prepare for the possibilities of war. Until we thus prepare we can make up our minds that we are ourselves responsible for any disaster that occurs to any army that the United States may raise in the future, not the man who may be at the head of the Army at the time.

“The tendency is to attack the man in office at the time. That is utterly unjust, and the people themselves and the representatives of the people in public life who have failed to provide the necessary means in advance, they are responsible when disaster comes. That applies to the Medical Department, and it applies to every other branch of the military establishment just as much.”

News of the Services.

Dr. George F. Adair, U.S.A., returned from Fort Jay to Fort Wadsworth.

Assistant Surgeon W. A. Angwin, U.S.N., ordered from the *Massachusetts* to the *Indiana*.

Surgeon G. H. Barber, U.S.N., ordered from the *Ohio* to the *Wisconsin*.
Lieutenant Charles Norton Barney, U.S.A., arrived at Fort Bayard.

P. A. Surgeon T. D. Berry, P.H.&M.H.S., ordered to Tampa Bay Quarantine, Mullet Key, Fla., and authorized to resume leave status.

Medical Inspector Henry G. Beyer, U.S.N., ordered from the *Wisconsin* to the *Ohio*.

A. A. Surgeon T. C. Blackburn, U.S.N., ordered from the St. Louis Naval Recruiting Station to the *Franklin*, and home from the *Franklin* until expiration of appointment.

A. A. Surgeon W. H. Block, U.S.N., appointed from January 12, 1906.

Lieutenant James Bourke, U.S.A., relieved from duty at Fort Sheridan and the New York Medical Supply Depot and ordered to the transport *Kilpatrick*.

Dr. John D. Brooks, U.S.A., granted one month's leave.

Captain William H. Brooks, U.S.A., promoted from First Lieutenant, January 1, 1906.

Captain Charles Y. Brownlee, U.S.A., ordered to Alcatraz Island.

Surgeon W. H. Bucher, U.S.N., ordered from the *Cincinnati* to the *Lawton*.

P. A. Surgeon J. T. Burkhalter, P.H.&M.H.S., granted one month's leave.

Captain W. A. Burns, O.N.G., of Dayton, Ohio, died November 21, 1905.

Dr. Caspar R. Byars, U.S.A., ordered from Fort Sam Houston to Fort McIntosh for temporary duty, and returned.

A. A. Surgeon R. A. Campbell, U.S.N., appointed from January 9, 1906.

Surgeon Paul M. Carrington, P.H.&M.H.S., ordered to El Paso, Texas, for special temporary duty.

Lieutenant James Carroll, U.S.A., ordered to attend the American Association for the Advancement of Science at New Orleans.

Dr. Samuel K. Carson, U.S.A., ordered from Riverton, Va., to Governor's Island to accompany troops to the Philippines.

Captain James R. Church, U.S.A., ordered to Washington, D.C., to receive at the hands of the President of the United States a medal of honor.

Lieutenant John A. Clark, U.S.A., granted one month's extension of leave.

Lieutenant John C. Clark, U.S.A., ordered to Fort Oglethorpe and granted one month's leave, with permission to apply for one month's extension.

P. A. Surgeon Taliaferro Clark, P.H.&M.H.S., ordered from Philadelphia to Easton and return on special temporary duty.

Lieutenant Jacob M. Coffin, U.S.A., ordered to the Army and Navy General Hospital at Hot Springs.

P. A. Surgeon G. M. Corput, P.H.&M.H.S., ordered to resume station at New Orleans.

A. A. Surgeon E. E. Curtis, U.S.N., appointed to date from December 21, 1905, and ordered to the *Franklin*.

Lieutenant Colonel William B. Davis, U.S.A., ordered to Vancouver Barracks for temporary duty as Chief Surgeon of the Department of the Columbia and granted three months leave.

Dr. George W. Daywalt, U.S.A., assigned to duty at Fort De Soto, Fla.

Lieutenant E. A. Dean, U.S.A., granted three months leave.

Surgeon C. M. DeValin, U.S.N., ordered from the *Lancaster* to the Baltimore Naval Recruiting Station.

Dr. Clarence F. Dickenson, U.S.A., ordered from Fort Logan to Fort Wingate for temporary duty, and to accompany the Second Infantry to the Philippines.

Surgeon Oliver Diehl, U.S.N., ordered to the *Lancaster*.

Assistant Surgeon B. H. Dorsey, U.S.N., ordered for duty with Recruiting Party No. 4.

A. A. Surgeon G. F. Duncan, U.S.N., ordered home from Naval Recruiting Party No. 3 and granted one month's leave.

P. A. Surgeon B. H. Earle, P.H.&M.H.S., granted four months leave.

Dr. Albert H. Eber, U.S.A., ordered from St. Clair, Mich., to Fort D. A. Russell to accompany troops to the Philippines.

Assistant Surgeon R. E. Ebersole, P.H.&M.H.S., ordered from Tampa Bay Quarantine to San Francisco, Cal.

Assistant Surgeon H. G. Ebert, P.H.&M.H.S., ordered from Fort Stanton, N.M., to Seattle, Wash.

Dr. James B. Ferguson, U.S.A., granted two months leave.

Lieutenant James D. Fife, U.S.A., ordered to Fort Slocum.

Captain Charles E. B. Flagg, U.S.A., ordered to Vancouver Barracks.

Lieutenant Charles L. Foster, U.S.A., assigned to duty with the transport service in San Francisco.

P. A. Surgeon M. H. Foster, P.H.&M.H.S., ordered from San Diego, Cal., to San Juan, Porto Rico.

P. A. Surgeon Edward Francis, P.H.&M.H.S., granted one month's leave.

P. A. Surgeon Joseph Goldberger, P.H.&M.H.S., ordered from special temporary duty at New Orleans to rejoin station at Washington.

P. A. Surgeon J. B. Greene, P.H.&M.H.S., granted one month's leave
Captain Henry S. Greenleaf, U.S.A., assigned to duty as Surgeon of the *Sheridan* en route to Manila.

Lieutenant J. W. Grissinger, U.S.A., ordered to Fort Jay.

Assistant Surgeon M. C. Guthrie, P.H.&M.H.S., ordered from Cape Fear Quarantine Station to Ellis Island, N.Y.

Dr. James B. Hallwood, U.S.A., ordered from Fort Leavenworth to Washington for annulment of contract, and granted two months leave.

A. A. Surgeon C. G. Hart, U.S.N., appointed from January 10, 1906.

Dr. John R. Hereford, U.S.A., ordered to Fort Moultrie.

Medical Inspector C. G. Herndon, U.S.N., retired on account of disability.

Dr. James William Holland, Westfield, Mass., late Contract Surgeon U.S.A., died November 29, 1905.

P. A. Surgeon J. M. Holt, P.H.&M.H.S., granted two months sick leave.

Lieutenant P. W. Huntington, U.S.A., ordered to Fort Rosecrans.

Colonel Pietro Imbriaco, the Italian delegate to the meeting of 1904, publishes his official report in the September *Giornale Medico del Regio Esercito*. The report forms a most valuable account of the meeting, especially interesting because of the view taken of its sessions by a foreign officer.

Dr. George H. Jones, U.S.A., ordered from Fort Fremont to Fort Moultrie; order for Fort Moultrie revoked and directed to proceed to his home at Toledo, Ohio, for annulment of contract.

A. A. Surgeon H. W. Judd, U.S.N., ordered home from Recruiting Party No. 4 to await expiration of appointment.

Major Jefferson R. Kean, U.S.A., has consented to represent the service as consulting editor of the New York Medical Journal in its recently enlarged sphere.

A. A. Surgeon W. P. Keen, U.S.N., ordered home from the Port Royal Naval Hospital and granted leave until expiration of appointment.

P. A. Surgeon J. W. Kerr, P.H.&M.H.S., ordered from St. John, N.B., to Washington, D.C.

Lieutenant E. D. Kilbourne, U.S.A., ordered to the Army General Hospital at the Presido of San Francisco, and granted one month's leave.

P. A. Surgeon W. W. King, P.H.&M.H.S., ordered from duty as chief quarantine officer of the Island of Porto Rico to Washington, D.C.

Captain Thomas J. Kirkpatrick, U.S.A., ordered to Fort Moultrie.

Dr. Charles F. Kuhn, U.S.A., assigned to temporary duty at Fort William H. Seward.

Surgeon Philip Leach, U.S.N., ordered from the *Massachusetts* to the *Indiana*.

Dr. George F. Leeper, U.S.A., granted two months leave from the Philippines.

Captain William F. Lewis, U.S.A., granted one month's leave.

Assistant Surgeon B. J. Lloyd, P.H.&M.H.S., assigned to duty in the office of the United States Consulate at Guayaquil, Ecuador.

Dr. Thomas S. Lowe, U.S.A., returned to Manila via the transport *Thomas*.

Lieutenant James I. Mabree, U.S.A., assigned to duty as Surgeon of the transport *Sheridan* en route to Manila.

Assistant Surgeon R. K. McClanahan, U.S.N., retired from active service.

Assistant Surgeon F. H. McKeon, P.H.&M.H.S., ordered from New Orleans to San Francisco Quarantine Station.

A. A. Surgeon P. F. McMurdo, U.S.N., ordered home from the *Franklin* until expiration of appointment.

Dr. Fred S. Macy, U.S.A., ordered to accompany troops from Allegheny Arsenal to Fort Porter, thence to New York and to take station at Fort Adams.

Captain C. J. Manly, U.S.A., granted one month's extension of leave.

Dr. John N. Merrick, U.S.A., ordered to accompany troops from Fort Missoula to San Francisco.

Assistant Surgeon R. H. Michels, U.S.N., ordered to the St. Louis Naval Recruiting Station.

A. A. Surgeon J. T. Miller, U.S.N., appointed from January 9, 1906, and ordered to the *Franklin*.

Lieutenant William H. Moncrief, U.S.A., ordered to Fort McPherson, Ga.

Dr. James E. Mount, U.S.A., granted three months leave from the Philippines.

Assistant Surgeon J. F. Murphy, U.S.N., ordered to the Omaha Naval Recruiting Station.

Dr. George W. Newlove, U.S.A., assigned to the transport *McClellan* from New York to Manila.

Captain Henry Page, U.S.A., ordered home from the Philippines.

P. A. Surgeon John E. Page, U.S.N., ordered to the *Franklin*.

Dr. Wallace E. Parkman, U.S.A., granted one month's extension of leave.

A. A. Surgeon A. Patterson, P.H.&M.H.S., granted one month's leave.

Dr. Joseph Pinquard, U.S.A., assigned to duty at Fort Leavenworth.

Lieutenant William A. Powell, U.S.A., ordered to Jefferson Barracks.

Assistant Surgeon R. C. Ransdell, U.S.N., ordered to the Newport Naval Hospital.

Dr. James Reagles, U.S.A., ordered from Fort Keogh to Fort Yellowstone for temporary duty.

Major Frederick P. Reynolds, U.S.A., ordered to Vancouver Barracks, Washington, for temporary duty as Acting Chief Surgeon.

A. A. Surgeon F. A. Richardson, U.S.N., ordered from the Baltimore Naval Recruiting Station to Naval Recruiting Party No. 3.

Surgeon Thomas F. Richardson, P.H.&M.H.S., designated to act as health officer of Honduras at a salary of \$7,500 a year.

Surgeon C. E. Riggs, U.S.N., ordered to the New York Naval Medical Supply Depot.

Assistant Surgeon R. E. Riggs, U.S.N., ordered from the *Franklin* to command the Port Royal Naval Hospital.

Assistant Surgeon T. W. Salmon, P.H.&M.H.S., ordered from Ellis Island to Buffalo, N. Y.

A. A. Surgeon L. H. Schwerin, U.S.N., ordered from the *Hancock* to the *Yankton*.

Lieutenant George H. Scott, U.S.A., ordered from the army transport service to Fort Duchesne, Utah.

Colonel Nicholas Senn has added to his already extensive literary duties the function of consulting editor of the *New York Medical Journal* under its new and enlarged administration.

Captain George A. Skinner, U.S.A., ordered to accompany troops from Fort Harrison to the Presidio of San Francisco and return.

Lieutenant Herbert M. Smith, U.S.A., ordered from the Presidio General Hospital to Fort Apache.

P. A. Surgeon E. K. Sprague, P.H.&M.H.S., ordered from Ellis Island to command Cape Fear Quarantine Station.

Assistant Surgeon R. D. Spratt, P.H.&M.H.S., ordered from Louisville Ky., to temporary duty at Mobile, Ala.

Captain Samuel L. Steer, U.S.A., ordered to accompany troops from Fort Assiniboine to the Presidio of San Francisco.

P. A. Surgeon W. G. Stimson, P.H.&M.H.S., granted one month's leave.

Dr. Harrison W. Stuckey, U.S.A., ordered from Fort Snelling to Fort Assiniboine for temporary duty.

Surgeon General S. Suzuki, I.J.N., addressed the Medical Society of the County of Kings, New York, last month, prior to which he was entertained at dinner by Major Arthur R. Jarrett. General George R. Fowler, Dr. Lewis Stephen Pilcher, Major Henry P. de Forest, Captain James P. Warbasse and others were also guests.

Baron Kanehiro Takaki, Surgeon General, retired, I.J.N., will deliver the Cartwright lectures for 1906 in New York, taking as his subject "Military and Naval Sanitation—Experiences drawn from the late Japanese-Russian War." Baron Takaki has already arrived in this country and has been the recipient of much attention.

Lieutenant E. M. Talbott, U.S.A., granted one month's extension of leave, and ordered to Fort Leavenworth.

Surgeon J. C. Thompson, U.S.N., ordered from the *Lawton* to the *Cincinnati*.

Dr. Charles W. Thorp, U.S.A., granted one month's leave.

Major Charles S. Turnbull, N.G.Pa., has been recommissioned Surgeon and assigned to the First Regiment.

Dr. George H. Tuttle, U.S.A., ordered from the Philippines to San Francisco to await orders.

Surgeon E. Wasdin, P.H. & M.H.S., granted one month's leave.

Dr. Clark I. Wertenbaker, U.S.A., granted one month's leave.

Dr. J. Samuel White, U.S.A., ordered from Fort Leavenworth to Governor's Island to accompany troops to the Philippines.

P. A. Surgeon H. W. Wickes, P.H. & M.H.S., granted one month's leave.

Assistant Surgeon W. M. Wightman, P.H. & M.H.S., ordered from San Francisco to Callao, Peru, for duty in the office of the United States Consulate.

Major Charles Willcox, U.S.A., granted four months leave about March 24, 1906.

Lieutenant A. W. Williams, U.S.A., assigned to duty as Surgeon of the *Meade* en route to Manila.

Surgeon L. L. Williams, P.H. & M.H.S., ordered to make inspection at Wilmington, N. C.

A. A. Surgeon C. K. Winn, U.S.N., ordered from the Omaha Naval Recruiting Station to the Washington Naval Hospital.

Dr. Oscar W. Woods, U.S.A., ordered from Fort Bayard home to Roanoke, Va., for annulment of contract.

THE ROYAL ARMY MEDICAL CORPS of the British Militia is announced to consist of thirty-four officers and 1,599 non-commissioned officers and men, divided into sixteen companies.

THE BUFFALO MEETING. —After much consultation and prolonged consideration of all the circumstances, the President, to whom authority to fix the date of the next meeting of the Association was delegated, has settled upon **September 11, 12 and 13, 1906**, as the days of the scientific and business sessions, with the 14th as an additional day devoted to a trip over Lake Erie, to Niagara Falls and other points of interest. The place of meeting will be at the National Guard Brigades Headquarters in Buffalo, an ideal location

for the meeting, where every facility will be afforded for the best conduct of affairs.

JOINT ARMY AND NAVY FIRST AID BOARD.—The President has appointed a joint board from the Army and Navy Medical Departments to take up the question of improvements in first aid dressings and uniformity of equipment for the two services, to meet in Washington under the direction of the Surgeon General of the Army. The members of the Board are: Medical Director John C. Wise, U.S.N., Colonel Valery Havard, U.S.A., Surgeon Charles F. Stokes, U.S.N., Surgeon William C. Braisted, U.S.N., Captain Charles Lynch, U.S.A. and Captain Carl R. Darnall, U.S.A. From the large proportion of late attachés with the Russo-Japanese forces, it is evident that advantage is to be taken of all the desirable improvements brought out during the recent war in the Orient.

A MEDAL OF HONOR FOR MAJOR JOHN O. SKINNER.—Bills have been introduced in the Senate and in the House of Representatives, providing for the award of a medal of honor to Major John O. Skinner, United States Army, retired, for gallantry in action while serving as an acting assistant surgeon, United States Army, in having rescued a wounded soldier who lay under a close and heavy fire during the assault on the Modoc stronghold during the battle of January seventeenth, eighteen hundred and seventy-three in the Lava Beds, Oregon, after two soldiers had unsuccessfully attempted to make the rescue and both had been wounded in doing so. The legislation proposed meets with the warmest approval upon the part of the service, the fact that Major Skinner was an Acting Assistant Surgeon at the time of the act of gallantry referred to, being only in a technical sense a disqualification.

THE MEDICAL DEPARTMENT AT PANAMA.—The following interesting colloquy occurred between the Secretary of War and a member of the Senate Committee on Appropriations at a recent meeting:

Senator Tillman. You have no special use for the Army now, have you—the United States Army?

Secretary Taft. Yes; we have lots of use for it.

Senator Tillman. I was not speaking of it in that sense; but I mean there is no active employment, outside of the Philippines for it? We have garrisons all over this country, and we have great use, for it as an army, as a nest egg from which to hatch a bigger army if we want any, and all that sort of thing. You do not understand me, of course, as underestimating the value of the Army. I am only inquiring whether there is any reason why army officers can not be employed as inspectors where they may be needed. I see in this list here a good many persons employed for one thing and another; for example, the chief quarantine officer gets \$7,000 over and above his pay as a marine hospital surgeon.

Secretary Taft. He is not an army officer, of course.

Senator Tillman. Oh, I know he is not; but the question I am trying to get at, taken rather from what you have said, is this: Whether in the economical administration and construction of this work there is anything that army officers, who might be profitably employed elsewhere, but who are not absolutely necessary just now, could do? And then, in connection with that having established the rule here that there must be one grade of pay for army officers and every other class of army employees, or that those who are getting fixed salaries are to be paid higher because they go to the Isthmus, I want to know wherein these men differ or what is the additional risk in living on the Isthmus over living in the Philippines? We do not pay our civilian employees in the Philippines anything specially extra because they are in the Tropics do we?

Secretary Taft. Yes, sir.

Senator Tillman. How much?

Secretary Taft. Twenty per cent.

Senator Tillman. But this, some of it, is as high as 200 per cent.

Secretary Taft. That is in the Regular Army. For actual service in the Regular Army the officers get ten per cent and the men get twenty per cent; and then for employment by the civil government—for instance, wherever an army officer is employed in the Moro government, he gets in addition twenty per cent of his salary for service in a civilian position. Then whenever we employ army officers in the Philippine government we pay them something in addition.

Senator Tillman. Well, take Colonel Gorgas: His army pay is \$4,950, and if you pay him twenty per cent additional that would be a thousand dollars additional, which would make his pay \$6,000. You give him \$10,000: you give him 100 per cent increase?

Secretary Taft. Yes, sir.

Senator Tillman. Or a little over; and I was trying to inquire why that is?

Secretary Taft. The Commission fixed that originally at \$7,500—I think it was \$7,500.

Senator Tillman. There is apparent discrimination here, you see. There is a rule established that looks to giving higher wages to men, to men or officials of the Government, who go to the Isthmus, than you have given men who take similar risks in the Philippines, and I want to know why it is.

Secretary Taft. I suppose one reason was that the conditions in the Philippines have become more settled than they were on the Isthmus. The risk, perhaps, was not so great in the Philippines as on the Isthmus. The work to be done by Colonel Gorgas was of an expert character that seemed to justify a large salary. The truth was that great complaint was made that Colonel Gorgas only got \$7,500 instead of \$15,000. The American Medical Association complained very bitterly that the chief adviser in the solution of a problem which was largely medical was not receiving adequate com-

pensation. The Commission yielded to that and gave him \$10,000 instead of \$7,500. That is my recollection of that.

Senator Tillman. Now, I see as I said, that this quarantine officer is paid \$3,250. You more than double that; you give him \$7,000, and give him over a hundred per cent increase. Is there any difference in the pay of the Marine Hospital people in the Philippines, or have we none there?

Secretary Taft. No; we have them there and they do get additional pay.

Senator Tillman. But not that much?

Secretary Taft. They get it in this way—I made objection to it when I was commissioner, but found that it was regarded as pay—they get the allowances of a major general.

Senator Tillman. The Marine Hospital surgeons?

Secretary Taft. Yes, sir; for room rent; and that added a very considerable amount to their pay.

Senator Tillman. As large a per cent as this?

Secretary Taft. No, sir; I do not think so large as that.

THE AMERICAN MEDICAL ASSOCIATION, through its National Legislative Council, reaffirms its support of the bill "to increase the efficiency of the medical department of the United States Army," and desires to express its deep conviction of the importance of this bill for the welfare of the Army of the United States, and recommends the adoption of the following address to the Committee on Military Affairs of the House of Representatives:

There is widespread interest in the bill "To Increase the Efficiency of the Medical Department of the United States Army." Many medical societies from all parts of the country have taken the initiative in recommending action similar to that proposed by the bill, while the unanimous endorsement of the action of the Legislative Committee of the American Medical Association by the representatives of the profession in nearly all of the counties of the United States shows that the physicians of the entire country believe that the measure is important and necessary.

Many of our physicians are more or less familiar with the objects and provisions of the bill, and so far as we know there has been a unanimous approval of its chief features, namely, the elimination of contract surgeons from the Army, the establishment of a Medical Reserve Corps and the increase in rank of the medical officers to encourage young physicians to enter the service of the Army.

Whether the bill drawn up two years ago by Surgeon General O'Reilly is the best possible bill in all details we do not feel competent to judge, but his masterly presentation of the reasons for its various features in the memoranda which accompany the former bill inspires us with confidence that he understands the subject and knows what is wanted better than any one else. The only criticism that we have heard among medical men is that the

bill is too modest in its requirements and that a thoroughly efficient service may require a larger force than is provided for. In particular the Medical Reserve Corps should be fostered with much care, and we hope that if any changes are made by the committee they will be in the line of increasing the efficiency of this corps.

Now why is there such a deep and general interest among physicians in this bill? This question would be a useless one if the committee of congress which is considering the measure was composed of physicians. As there are no members of the medical profession on the committee, however, it is probable that the point of view of the physician is somewhat foreign to the committee and some consideration of this subject may be necessary to correct erroneous ideas concerning the forces that may have influenced us.

The medical profession feels itself the natural protector of the health of the state. One important function of medicine has always been to prevent disease. In recent years this function has come to be more important than any other. The greatly increased interest in reports of boards of health and in vital statistics which show the causes of epidemics and of all other causes of sickness and death demonstrates the growing importance of sanitary medicine. Necessary provision to guard against unhealthy conditions and epidemics of disease are obligatory and failure in foresight and sanitary measures are medical crimes. An epidemic of smallpox or typhoid fever in a city is a disgrace to the board of health of the city, and is shared by the whole medical profession of such a municipality. The public respect for the medical profession should fall if its public spirit and interest in the health of the community does not keep it awake to all sanitary problems and make it earnest and efficient in combating public danger.

In support of this proposition the history of the action of the medical profession in a number of communities could be cited. Unfortunately lack of organization of the profession in the past has often made it impossible for it to exercise that influence that by right belongs to it. The recent remarkable growth of organization in the medical profession in the United States has led it to feel its responsibility much more deeply.

This inherent interest in public health caused the profession to be most deeply moved and humiliated by the events of the Spanish war. The terrible epidemics of typhoid, quite unnecessary and avoidable, now when we know the cause of the disease and its modes of propagation, that led to the sacrifice of many lives and to the uncountable waste of illness and chronic ill-health, made a deep impression on the physicians of the country.

All knew that there had been some great mistake that was responsible for these epidemics and one which should be discovered and remedied when found. When the Dodge Commission, appointed by President McKinley reported that one of the principal defects under which the medical department labored was a lack of trained surgeons of the regular medical corps and recommended an increase in their number, attention was called to the funda-

mental need of a medical department of an army, viz: men trained in army sanitation and administrative detail. Civilian physicians, no matter how skilled in their own special field of work, can not at once take charge of the medical supervision of an army.

All know the proper selection and sanitary preparation of camp grounds with proper disposal of sewage and the prevention of infection of drinking water and food, as well as keeping track of patients by means of a system of records, are matters that require much preparation. Military medical practice is, indeed, a specialty, as much as any other medical specialty and a military specialist cannot be created in a day or a month, any more than a great abdominal surgeon can be made in that time. In the emergency of war these specialists are of inestimable value.

When in the reorganization of the Army in 1901 the recommendation of the Dodge Commission was ignored, when the suggestions of the then Surgeon General Sternberg were dismissed without a hearing and the Medical Department not only not increased but greatly reduced in efficiency, those who kept informed of the situation became very indignant at this slight placed on the medical profession. As a knowledge of the situation has gradually been disseminated during the last four years and as the condition of the Army in respect to sanitation has been brought into comparison with that of the Japanese Army, the indignation has grown. If this condition is not remedied now after the need for it has been set forth so often by the General Staff of the Army, by the Secretary of War, the President of the United States and after it has been shown without contradiction that the united medical profession of the country favor such action it seems likely that the interest of the physicians of the country will grow until they will want to know why their views on so important a subject should not receive consideration.

Those who oppose the bill make a variety of objections. Some of these are irrelevant: for example, it is said that the Army is already top-heavy, with the officers numbering one-sixteenth of the Army, as if too large a number of officers in other departments, if such an excess exists, was a reason for objecting to a proper number in the Medical Department. Also irrelevant is the petulant assertion that every Army Bill is simply one to increase the rank and pay of the officers. Aside from these there are about five objections that should be considered.

1. "No change in the present law is necessary. The condition of the health of the Army is good, as shown by the annual report of the Secretary of War. Should war break out, the civilian physician must be called in under any circumstances." *Answer:* 165 contract surgeons are now employed. They have no certain authority even over the hospital corps. They are being constantly changed, they are not trained in their work, and much loss occurs, because of their lack of training in this respect. In time of war

a corps of trained men is absolutely necessary properly to care for the sanitation of the Army.

2. "The increase in the number of officers in the higher ranks is not necessary." *Answer:* The best quality of men cannot be secured without adequate compensation. In the Army both rank and pay are regarded as compensations. The pay is not large enough to make up for a lower rank. The pay, indeed, is determined by the rank. The restricting of the number of the higher prizes in the medical department as compared with those in other departments of the Army, is unjust to the medical officers, as it is unjust to the medical profession.

3. "The proposition to promote lieutenants in three years is not desirable." *Answer:* This is a detail best understood by the Surgeon General, but in a general way the same answer can be given as to objection 2, namely, it is necessary as an inducement to obtain a medical corps of the proper quality and standing.

4. "The plan of the reserve corps is not practicable, nor well thought out." *Answer:* What better plan can be proposed? Certainly not the contract system now in vogue, which every one condemns. The plan proposed is elastic and leaves much to development, and that is its good feature. It will probably and certainly lead to the organization of a fine body of men, who will keep informed of the essentials of the Army practice and who, through voluntary association will have a great influence in the improvement of the service. The Reserve Corps will not necessarily interfere with the medical corps of the national militia, but it will probably, have an important influence in developing and molding such a system as will be of mutual benefit to the national guard and to any emergency army of the United States.

3. "The country is now spending more than it takes in. Under these conditions we can not increase the expense." *Answer:* The increase in expense will be but slight, because the change from the contract surgeon system will be a considerable saving. The change contemplated will require four years, and as the new members of the staff must spend some months in the Army Medical School there will be practically no increase during the first year. When the change is completed in four years, the deficiency in income should have disappeared. The cost is truly very little, for the great saving it will secure in life and health.

Current Literature.

ROTH'S JAHRESBERICHT.*

THIS important annual of military medicine and surgery, prepared by German medical officers, under the direction of the editorial staff of the *Deutsche Militaerärztliche Zeitschrift*, presents the literature for 1904 in its thirtieth volume. In the limit of 198 pages is included a succinct analysis of all German medico-military literature and a considerable portion of that of the rest of the world. We acknowledge its courtesy in remarking that the JOURNAL OF THE ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES stands at the head of military medical journalism in the matter of typography and illustration. Its contents are comprised under eleven general classes, including organization, tactics, hygiene, military medicine, naval sanitation, military surgery, medico-military description, etc. The work continues as hitherto to be a monument to the industry and energy of General Krockner, its editor-in-chief, and his associates.

YEAR BOOK OF MEDICINE AND SURGERY-1905.†

THE valuable digest of scientific progress and authoritative opinion on all branches of medicine and surgery, issued annually under the editorship of Dr. George M. Gould, sustains the high reputation of former years in the issue for 1905. The department editors are men of the highest standing in the medical profession and their opportunities for gaining

*W. Roths Jahresbericht ueber die Leistungen und Fortschritte auf dem Gebiete des Militaer-Sanitaetswesens. Herausgegeben von der Redaktion der Deutschen militaerärztlichen Zeitschrift XXX Jahrgang Bericht fuer das Jahr 1904. 8vo; pp. 198. Berlin, Ernst Siegfried Mittler und Sohn, 1905.

†The American Year Book of Medicine and Surgery. Edited by GEORGE M. GOULD, M.D. 8vo; Medicine, pp. 701, Surgery, pp. 696; with numerous illustrations. Philadelphia and London, W. B. Saunders & Co., 1905.

information are unexcelled. The work is profusely and elegantly illustrated and forms a combination of the highest value.

MOYNIHAN'S GALL STONES.*

A SECOND edition of a surgical work within a twelvemonth is a remarkable record rarely paralleled, and the exhaustion of the first issue of Mr. Moynihan's treatise on gall stones affords to him the unusual opportunity of so early a revision of his first expressions. There is no change in theory, but the general literature of the subject has been carefully considered and new touches have been introduced here and there, amounting in all to an addition of about seventy pages, including a new chapter upon congenital abnormalities of the gall bladder and bile ducts.

GENITO-URINARY AND VENEREAL DISEASES.†

THE widely extended vogue of White & Martin's genito-urinary textbook is signalized by the issue of a sixth edition, in which the text is brought fully up to date by additions, omissions and revisions. The section upon prostatic hypertrophy shows especial attention and full consideration is given to the modern methods of operative treatment which are excellently stated. The most noteworthy feature of the book however is its index. The writer has attempted on other occasions to emphasize the very great importance of properly indexing a treatise,—which the authors of other days generally relegated to a student or a clerk. Next in importance to a clear text is a clear index, and it should be taken up by an expert in every case. We compliment the authors and publishers upon the high grade of the index in this work and commend to the attention of medical publishers in general the desirability of following along the same line.

**Gall Stones and their Surgical Treatment.* By B. G. A. MOYNIHAN, F.R.C.S. Second edition; 8vo; pp. 458, with numerous illustrations. Philadelphia and London, W. B. Saunders & Co., 1905.

†*Genito-Urinary Surgery and Venereal Diseases.* By J. WILLIAM WHITE, M.D. and EDWARD MARTIN, M.D. *Sixth edition.* 8vo; pp. 1092, with 300 engravings and 14 colored plates. Philadelphia and London, J. B. Lippincott Co., 1905.

BOSTON'S CLINICAL DIAGNOSIS.*

THE appearance of a second edition of Boston's excellent Text-Book of Clinical Diagnosis is a sufficient comment upon the advantage of the book in the work of the profession. It enables the author to make numerous additions, among which may be noted Biff's New Hemogelometer, Ficker's Reaction, Ravold's Test for Albumin, etc. The exceptional amount of space given to the consideration of animal parasites and microorganisms gives a timely character to the work which is well worth consideration.

DIAGNOSTIC METHODS.†

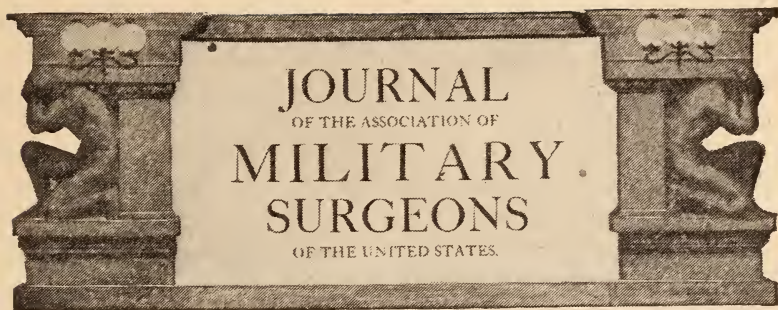
THIS magnificent work, published under the title of *Lehrbuch der klinischen Untersuchungs-Methoden* and quickly passing through four German editions, may well call for an interested American audience. Its consideration of all forms of diagnosis is profound and detailed. In a few instances where the latest German edition was not fully up to date, the American editors have supplied what was lacking and produced a combination which will stand as a worthy exemplar of the best type of modern medicine. The translation is in idiomatic English and accurately expressive of the ideas of the original. The illustrations are of the best type and are, many of them, made especially for the American edition.

BOOKS RECEIVED.

Memoranda on Poisons. By THOMAS HAWKES TANNER, M.D. Tenth Revised Edition by HENRY LEFFMANN, M.D. 24mo; pp. 177. Philadelphia, P. Blakiston's Son & Co., 1905.

*A Text-Book of Clinical Diagnosis. By Laboratory Methods. By L. NAPOLEON BOSTON, M.D. Second edition, revised and enlarged. 8vo; pp. 563, with 330 illustrations. Philadelphia and London, W. B. Saunders & Co., 1905.

†A Treatise on Diagnostic Methods of Examination. By Prof. Dr H. SAHLI. Edited by FRANCIS P. KINNICUTT, M.D. and NATHANIEL BOWDITCH POTTER, M.D. Royal octavo; pp. 1008, with 383 illustrations. Philadelphia and London, W. B. Saunders & Co., 1905.

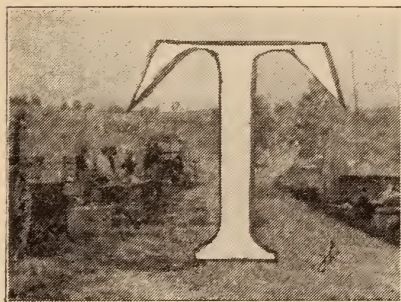


Original Memoirs.

AUTHORS ALONE ARE RESPONSIBLE FOR THE OPINIONS
EXPRESSED IN THEIR CONTRIBUTIONS.

MEDICAL AND SURGICAL OBSERVATIONS DURING A THREE YEARS' TOUR OF DUTY IN THE PHILIPPINES.

BY MAJOR JOHN MONRO BANISTER, A.B., M.D.,
FORT RILEY, KANSAS.
SURGEON IN THE UNITED STATES ARMY.



THE facts narrated and views expressed in this paper, which from the scope of the article must be presented in a very cursory manner, are given from the personal experience of the writer during his three years' tour of duty in the Philippines, as well as from authoritative data furnished

him, in certain instances, from the experience of his professional friends in the Islands.

THE CHOLERA EPIDEMIC.

I arrived in Manila Bay on March 21st, 1902, after a two months' voyage from New York via the Suez Canal, and reported

for duty just at the time of the appearance of cholera in the city of Manila, as upon the day previous two cases of suspicious illness at the San Juan de Dios Hospital had been pronounced true Asiatic cholera. The infection was supposed to have been introduced in vegetables brought in from China. The disease at once began to spread with fearful rapidity, and thus was begun the great cholera epidemic, which extended throughout the entire Archipelago, and continued to ravage the Islands for the period of two years. The official commencement of the epidemic was on March 20th, 1902, and the last case occurred on March 8th, 1904. The Philippine Islands were officially declared free from cholera on April 27th, 1904. During this epidemic there were officially reported to the Insular Board of Health 166,252 cases of cholera, and 109,461 cholera deaths. Many cases were concealed by the natives, and many deaths not reported to avoid official interference and quarantine restrictions, so that the above official figures do not approximate either the actual number of cases, or the mortality rate from the disease.

Captain E. L. Munson, Assistant Surgeon U.S.A., to whom I am indebted for the above statistics, whose magnificent, self-sacrificing work on the Insular Board of Health in connection with cholera and plague won for him the admiration of all American medical men in the Islands, civilian as well as military, estimates that the unreported cholera cases would amount to about one-third of the reported cases, so that on this basis an approximate estimate of the total number of cases would be about 221,669. The officially reported deaths also fell far short of the actual mortality, especially throughout the provinces, where the more exact methods in vogue in Manila could not be so accurately enforced. Captain Munson has called my attention to a very peculiar feature in connection with this epidemic, at least in so far as the Manila cases were concerned, namely, the fact that in Manila the virulence of the disease increased as the epidemic progressed, in spite of increased experience in the methods of handling the victims, and that the mortality rate was greatest toward the end of the cholera invasion. Munson's notes show the following rates of mortality in Manila by years:

TABLE I.

YEAR.	MORTALITY RATE.
1902	80.7 per cent.
1903	85.6 per cent.
1904	91.2 per cent.

This observer also gives me, in a recent letter, the following mortality rate for different ages in the Manila cases, and states that two-fifths of the total classified cases occurred in the age decade between 20 and 30 years.

TABLE II.

AGE.	MORTALITY RATE.
Under 1 year	95.65 per cent.
From 1 to 10 years	83.15 " "
" 10 " 20 "	71.57 " "
" 20 " 30 "	72.00 " "
" 30 " 40 "	74.21 " "
" 40 " 50 "	79.91 " "
Over 50 years	78.78 " "

Upon the first appearance of the cholera in Manila, the Insular Board of Health made the most earnest efforts to stamp out the infection, but unfortunately the efforts of the health authorities were bitterly opposed by the native population of all classes. The rich and the poor, the educated and the illiterate, the padre, the physician, and the lawyer were equally emphatic in their hostility to American methods exerted in their behalf. Add to this antagonism, the fatalism, the superstition, the filthy habits, and the universal disregard of the most primitive rules of hygiene on the part of the native population, and it will not be necessary to seek farther for an explanation of the rapid spread of the pestilence throughout the Islands. Believing firmly that the cholera epidemic was a visitation at the hands of God, the native Filipino placed far more reliance upon the preventive efficacy of the cross painted on his door by the padre, at so much per cross, and upon the miraculous influence of the nightly incantations and religious processions, so strenuously resorted to in the provinces, than upon the boiling of his drinking water, and upon other such "silly" means of prevention proposed by the Americans.

Outside of Manila the water supply of the natives was almost entirely derived from shallow surface wells, which, located in densely settled neighborhoods where every law of hygiene was set at defiance, were constantly contaminated by surface drainage, and furnished a most efficient means for the propagation of cholera. Many families in the provinces would at times make use of the same well, which becoming infected would disseminate cholera in the most liberal manner. The natives after a time in the provinces began to associate cholera with their water supply, and in many places the Americans were accused of poisoning the wells with the intention of killing off the natives and possessing the land for themselves. The native vegetables, and other food products, were very prone to become infected both from the method of cultivation, fertilization being accomplished in many instances by the use of human feces, and from lack of cleanliness in handling after being gathered for use. Flies were found to be most efficient carriers of the disease on their legs and proboscides, and in the civil laboratory in Manila it was found that alkaline fruits, such as the banana, furnished a good medium for the culture of the cholera spirillum. Flies swarming in the market places would alight on the fruit exposed for sale, and, introducing their infected proboscides through some rent in the rind to suck the juice from the succulent pulp, would thus introduce the cholera organisms into the interior of the fruit where colonies of the spirillum would soon develop. Then again, in so far as the Manila market was concerned, in bringing their vegetables and fruits to market in their boats down their great waterway, the Pasig River, the natives, in order to preserve the freshness of their wares, would most frequently trail them in the water, and, as the water of this stream was virtually one great cholera culture, the capacity of provender, so treated, to disseminate infection can well be imagined. As showing one very efficient way in which the natives carried cholera infection from house to house, I was informed in Cebu, where I was on duty as chief surgeon of the Department of the South Philippines, by a medical officer, who was on cholera duty there assisting the civil authorities, that he frequently saw the floors of the native houses containing

cholera patients soiled with copious cholera dejecta, through which visiting shoeless natives from neighboring houses would walk with perfect indifference, and thus carry the infection on their bare feet to their own homes, or to the dwellings of others. Another way in which the disease was most efficiently conveyed was by means of the bedding and clothing of the defunct cholera victims. In certain districts, upon the death of a native of the lower class, his bedding and clothing would be divided among his relatives and friends, and would thus become most active means of carrying the infection into the houses of the neighborhood. As showing the effect of religious superstition, in promoting the spread of cholera, I shall quote two stories, which were current in Manila at the time. At Vigan a native spread the report that he had seen San Roque, the patron saint, emerging from a certain well, and that the water thus troubled by the saint was a sure preventive of cholera infection and an infallible cure for all human ailments and afflictions. As a result the whole country side flocked to this well to secure relief from bodily ills. The well was infected with cholera. Further comment is unnecessary. In the Tondo district of Manila there suddenly burst from the earth a spring, which was at once proclaimed a miraculous gift of Providence by the superstitious natives, who thronged the neighborhood to partake of the life giving waters. A rapid and unaccountable increase of cholera in the district caused an investigation to be made with the result that the *sacred spring* was found to derive its source from a neighboring sewer.

The mortality from the disease was so great in the provinces that it was with difficulty that the dead could be buried. In the cemetery at Iloilo as many as seventy-five bodies would be lying on the ground at one time awaiting burial. The permanent occupation of a coffin is a luxury beyond the hopes of the lower class Filipino. The dead of this class are generally wrapped in coarse matting, and carried to the cemetery in rented coffins borne on the shoulders of four native bearers. Upon arriving at the cemetery the top of the coffin is lifted off, the corpse taken out, and the coffin carried back for the use of the next renter. In Cebu, during the epidemic, the cholera dead were carried in this

manner, and also in a species of litter covered with black oil cloth when the dead were many and the coffins for rent at a premium. These rude litters resembled somewhat the litter shown in illustration No. 1, but were not exactly on this pattern.

While in Cebu, I have seen a great many of the coffins, referred to above, borne under my windows on the way to the cemetery, where the bodies of the dead would accumulate so rapidly that they could scarcely be buried in the long trenches provided

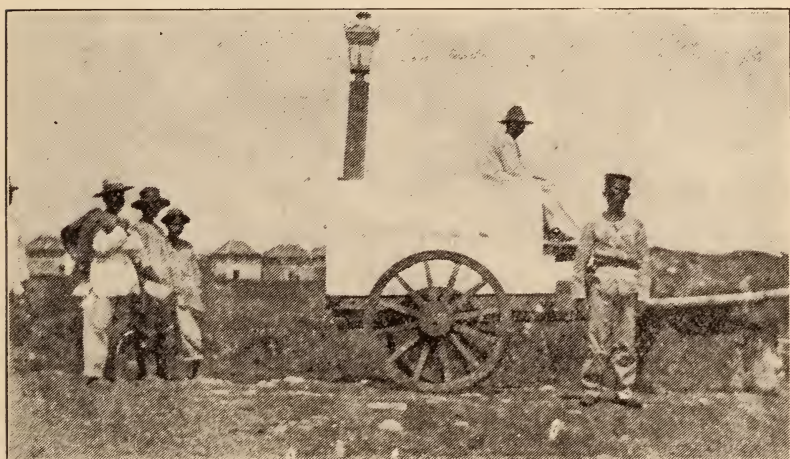


1. Bearing a Cholera Victim to the Cemetery at Iloilo, Panay.

for them. Many a time I have seen the bearers bringing back the empty coffins on their shoulders, eating fruit or smoking cigarettes from fingers, which had just been occupied in lifting the cholera dead from their temporary receptacles.

I have never had access to statistics bearing upon the rate of infection in these native bearers and handlers of the cholera dead, but from their careless habits, as just instanced, the death rate among them must have been great. In Iloilo, the capital of

Panay, where I was stationed as chief surgeon, Department of the Visayas, the cholera dead were officially collected in native two-wheeled carts, each drawn by a carabao (See illustrations Nos. 2 and 3) and, when its individual load was complete, each cart would be driven to the cemetery and unloaded, as shown in illustration No. 3. These, and the other cholera illustrations given in this paper are taken from photographs made in Iloilo on the spot. Illustration No. 1. shows a means of transportation for the cholera dead also in use in Iloilo to some extent. From what I saw of the native habits in the large towns of Cebu, and



2. Burial Cart Containing its Load of Cholera Dead at Iloilo, Panay.

Iloilo, it was a surprise that at least fifty per cent of the population did not succumb to cholera.

In striking contrast to the ravages of cholera among the native population stands the exemption of the educated American, and the *comparative exemption* of the enlisted man of the U.S. Army. During the entire two years of the epidemic only one American officer of my acquaintance became infected, and not a member of an officer's family within my knowledge, and not an educated American civilian among my personal acquaintances contracted cholera, with the single exception of one ex-officer of

volunteers. I *heard* of one officer who died from cholera, and two American officers of native scouts are stated to have contracted the disease, but these cases did not occur within my personal observation. Altogether among the American and native troops there occurred during the entire epidemic, according to the reports of the Surgeon General, 634 cases, with 382 deaths. These cases of infection were in a great degree due to carelessness on the part of the victims themselves, and to an inclination on



3. Unloading a Burial Cart at the Cemetery, Iloilo, Panay.

The objects on the ground, seen indistinctly on the right are piles of cholera bodies all wrapped in matting.

their part to set at defiance the rules for their guidance laid down in orders by the military authorities. Many of these military cases were from the ranks of the "vino fiends," and it was not often that an intelligent and self-respecting soldier contracted cholera.

Magnificent work was done by the medical officers of the U.S. Army, regulars, volunteers and contract surgeons, in protecting the military garrisons, and to their earnest and intelligent efforts

is due the fact that there was such trifling loss in the military personnel, although constantly surrounded by virulent infection, and with the natives dying by hundreds on every side.

Camps and garrisons located in native towns, as they usually were, would frequently become infected through carelessness and disobedience of orders on the part of some dissipated enlisted man, or civilian employee, but almost invariably the Medical Department of the Army would stamp out the disease in its incipency,

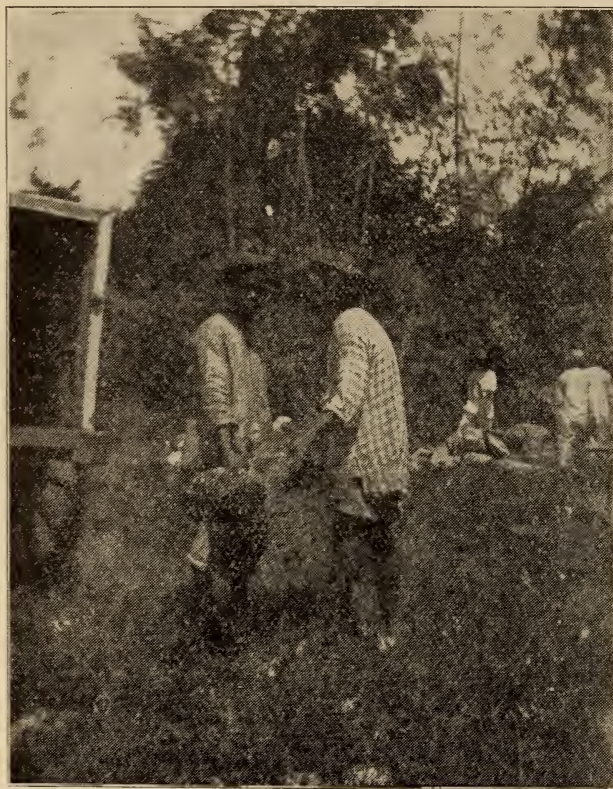


4. Burying the Dead in a Trench in the Cholera Cemetery at Iloilo.

and few military victims would be reported from any one focus of infection.

At the very commencement of the epidemic the military authorities realized the true seriousness of the situation, and steps were at once taken to thoroughly inform the troops of the danger threatening the Army in the Philippines, and to instruct all, officers and enlisted men alike, in the necessary measures to be taken to avoid infection. Upon March 23rd, 1902, three days

after the appearance of cholera in the city of Manila, general order No. 58, Headquarters Division of the Philippines was issued, in which order the nature of the disease, the methods of infection, and the preventive measures necessary were explained, and *the proper precautions ordered*. The chief surgeon of the



5. Unloading a Burial Cart at the Cholera Cemetery.

The two natives in the foreground are bearing a body wrapped in matting. Bodies similarly covered can be seen in the background,

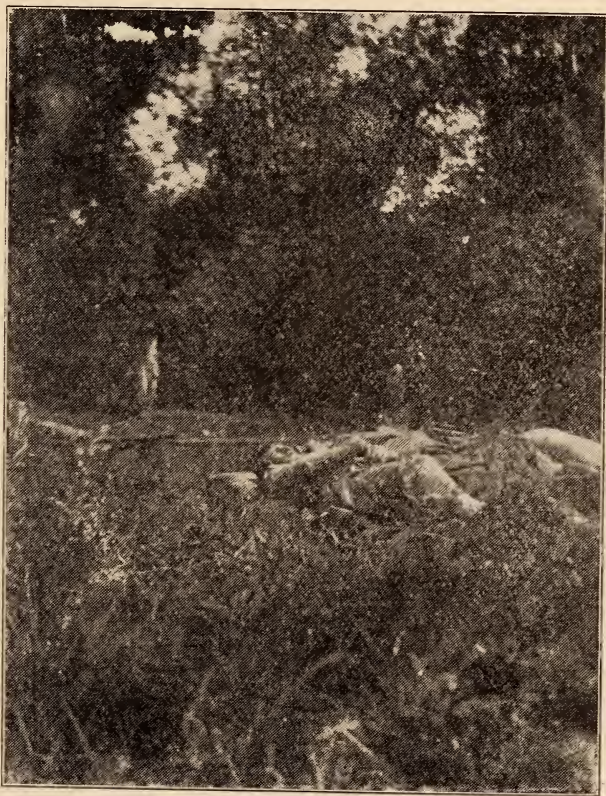
Division of the Philippines, and the chief surgeons of departments and brigades issued thorough instructions to the medical officers of their commands. The civil governor of the Philippine Islands requested from the commanding general the co-operation

of the division, and on March 23rd, 1902, two days after the issuing of the order just mentioned, general order No. 66 was published.

Under the provisions of this order medical officers of the mili-

tary service were placed in charge of the sanitation of all native towns where troops were stationed, and were directed to exercise, as well, a supervision over towns and barrios contiguous to their home stations, and to organize boards of health in these towns for the protection of the people. Furthermore, authority was given for

very radical measures to be taken upon the appearance of cholera in such towns, the following provisions, among others, appearing in the order cited—“A site for a detention camp will be obtained in each town. This need may be met by putting up temporary bamboo



6. Cholera Dead in the Iloilo Burial Ground.

The first American victim—civilian—in the foreground.

and nipa shelter at an isolated spot, or better, by obtaining an isolated house. On the appearance of a case of cholera, all persons, who have been in contact with such case, except the necessary attendants, will be removed to said camp. The sufferer

from the disease may be left in the house, in which he was attacked, which should be guarded until his recovery or death. In the latter case the body will be burned or buried with quick lime. If the house in which the case has occurred, is of nipa, it will be burned; if of wood, carefully disinfected."



7. Two Americans in Charge of Iloilo Cholera Burial Ground.

in native towns, and were thus most efficient in retarding the spread of the epidemic until the entire cholera work, in so far as the natives were concerned, was placed in the hands of the Insular Board of Health.

From April 3rd, until June 1st, 1902, I was chief surgeon of

It will be noted that these instructions were intended to work for the protection of the native population, as well as to ward off from our troops, serving in their midst, infection threatened through them. Under the authority of this order the medical officers of the Army again and again stamped out foci of infection

the First Separate Brigade with headquarters at Dagupan, Pangasinan Province, Luzon. During these two months, cholera reached the towns of Lingayen and San Carlos, and one case each was conveyed by sea to the neighborhoods of Vigan and Laoag. Stringent measures under the authority of general order No. 66 were at once brought into play at these places. The infected houses at Lingayen and San Carlos were burned,



8. Scene in the Iloilo Cholera Cemetery.

Bodies wrapped in matting lying about on the ground awaiting burial.

and all contacts removed to a detention house, provided at each place, and guarded there.

The effects of the cases landed near Laoag and Vigan were burned, and the bodies of the dead buried where they were brought ashore. In all of these four places the infection was killed at once, and the disease was not given a chance to spread. When I left the brigade in June, 1902, there was not a case of cholera in the entire brigade. In July this supervision of the

military over the native population was discontinued, as everything pertaining to the natives was turned over to the civil government, at that time, and the medical officers of the Army thenceforth had no ex-officio control of sanitary matters in so far as the natives were concerned, with the exception of those, who were relieved from their military duties, and detailed on duty with the Insular Board of Health. From this time on the sanitary work of the medical officer on duty with troops was limited to the protection of the military personnel alone. How well and faithfully he performed this important duty has already been noted.

The means of prevention adopted to protect the troops were generally on the following lines:

1. Enlisted men and civilian employees were forbidden to visit native houses or shops, or to partake of native food or drink of any description.

2. All persons in the military service, including civilian employees, were forbidden to drink other than distilled or boiled water. Such water was furnished in abundance for all at all stations, so that no one had any excuse to use water from native sources.

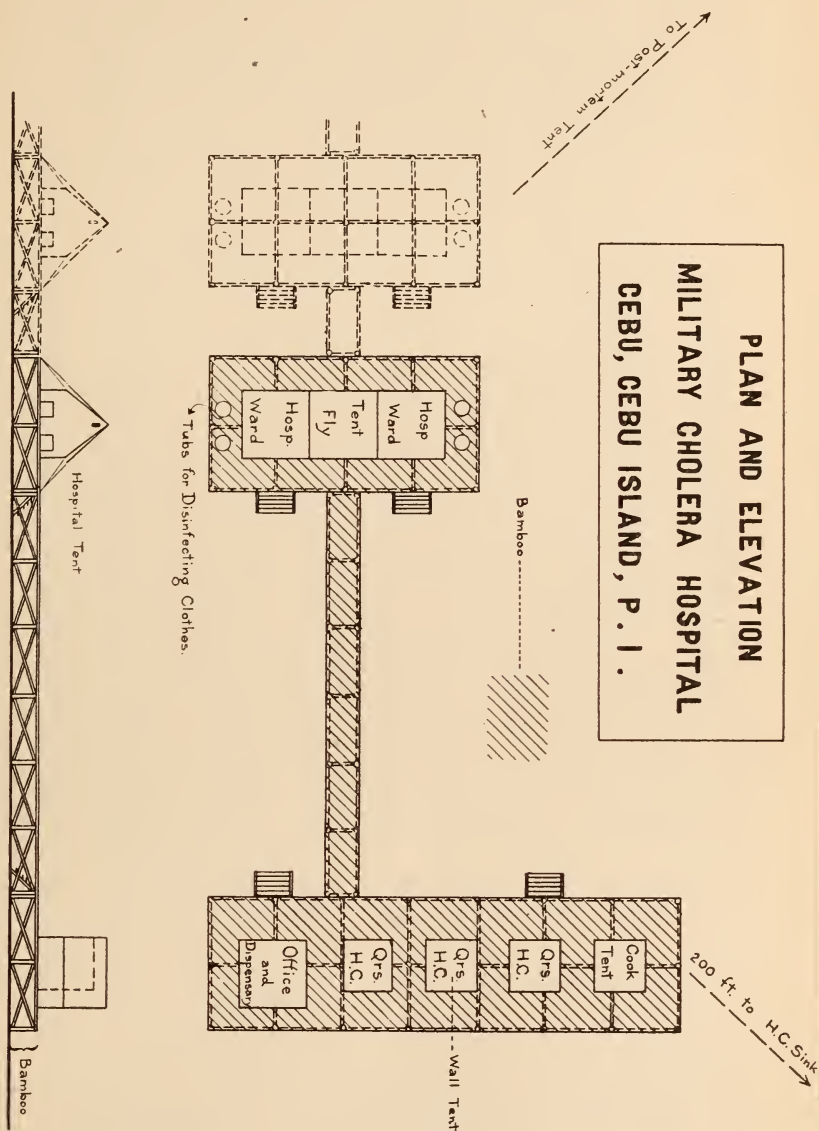
3. The use of cold, or uncooked food, was forbidden, with the exception of bread and crackers, which could be eaten cold. All food, with the exception noted, was required to be *freshly cooked and served hot*.

4. All glass and crockery, knives, forks, and spoons were required to be washed immediately after meals with hot water, which had been raised to 212°, and just before the next meal to be scalded anew.

5. The dish cloths were required to be frequently boiled, and to be carefully handled. No dirty cloths were permitted to be used in the kitchens or mess rooms.

6. All food was directed to be protected from flies by means of gauze netting, or by the use of wire gauze when obtainable, and was not permitted to be placed upon the table in advance of the meal hour.

PLAN AND ELEVATION
MILITARY CHOLERA HOSPITAL
CEBU, CEBU ISLAND, P. I.



7. No scraps of food or other articles calculated to draw flies, were permitted to remain in the kitchen or mess rooms.

8. The slops and garbage from the kitchens were ordered kept in closed garbage cans, and to be removed at least once a day, oftener if necessary. The throwing of dish-water upon the ground was not permitted.

9. The men were warned against the use of unboiled water for rinsing their mouths, or brushing teeth.

10. The company sinks were given special and careful attention. Almost everywhere throughout the Islands, the Quartermaster dry earth closet was used. These were kept well policed and disinfected.

11. At each station it was expected that a cholera hospital would be provided, and located at some point remote from the quarters of the troops, to which all suspicious cases would at once be sent. These hospitals were sometimes located in buildings, but generally constructed of tents. In this connection I shall call attention to the ground plan of the cholera hospital provided for the battalion of infantry at Cebu, where I was on duty as chief surgeon of the Department of the South Philippines during the height of the epidemic. This hospital was designed by Captain Black, Assistant Surgeon, U.S. Volunteers and erected under his supervision. It answered its purpose admirably, and can be thoroughly recommended. The tents constituting the hospital wards, and the dispensary, quarters, and kitchen for the Hospital Corps were pitched upon two separate bamboo platforms raised about four feet from the ground, and connected by a bamboo bridge similarly constructed. The wards consisted of two hospital tents facing each other, the space between the two being covered with a hospital tent fly. In a hospital of this description additional wards could be easily constructed, if needed, on separate platforms parallel with each other and connected by short bamboo bridges. Such an arrangement was provided for at Cebu but it was never found necessary to construct more than the two wards represented in the plan as we never had more than three or four patients in the hospital at any one time. The use of the bamboo platforms, which were erected very cheaply

and expeditiously, was a great advantage as they raised the tentage above the wet ground, thus protecting the patients and attendants from dampness to a great degree during the rainy season. In the Cebu Hospital two or three tubs filled with disinfectant solution were kept on the platform in the rear of each ward to be used for disinfecting the soiled clothing and bedding of the patients. These tubs are represented in the plan.

In private families the general precautions in use, as given above, were carried out in a greater to lesser degree depending upon the personal equation of the managers of the households, some housekeepers, of course being far more careful than others.

From what I saw of the management of cholera in the Philippines I have no hesitation in pronouncing it an easily preventable disease when implanted in an enlightened community, and to formulate the opinion that the occurrence of another widespread epidemic in the United States would be a disgrace to our national intelligence.

Treatment: As far as the treatment of the disease was concerned nothing startling in a therapeutic way was evolved from the experience acquired in the cholera epidemic in the Philippines. Those of most experience in the treatment of the disease, after any temporary excursion into the byways of therapeutics, would return to the employment of their old standbys of the materia medica. Hypodermoclysis and enteroclysis were found to be of service, as were venous transfusions of warm normal salt solution. Haffkine's cholera treatment was not used at all, not being received with favor in the Philippines. In spite of all treatment death persistently followed cholera infection to a heart-rending extent, and, in fact, *the only treatment which appeared to be efficacious was that of prevention.*

BERI-BERI IN THE PHILIPPINES FROM THE STANDPOINT OF THE MILITARY SURGEON.

Beri-beri is a disease of practical importance to the American military surgeon chiefly on account of its proneness to attack our native troops in the Philippine Islands. As far as the white troops are concerned the disease occurs with such comparative

infrequency that we might almost ignore it. With the Philippine Scouts, however, it is a very different matter, and this disease contributes in quite a marked degree to the non-effective list in the case of these native troops. During 1902 and 1903, the first two years of my stay in the Philippines, the white troops furnished forty-five cases of beri-beri with five deaths from this cause, whereas the native troops, with a mean strength, for each year, below five thousand, had one thousand two hundred and twelve admissions to sick report*. Attention is invited to the accompanying table which furnishes the data for comparison in compact form.

TABLE III.

BERI-BERI IN THE PHILIPPINE ISLANDS AMONG WHITE AND NATIVE TROOPS DURING 1902 AND 1903, WITH ADMISSION RATE PER 1,000 OF STRENGTH.

YEAR.	WHITE TROOPS.				PHILIPPINE SCOUTS (NATIVE).			
1902	MEAN STRENGTH 30,300.				MEAN STRENGTH 4,826.			
	Admissions.		Deaths.		Admissions.		Deaths.	
	Number.	Ratio.	Number.	Ratio.	Number.	Ratio.	Number.	Ratio.
	23	0.75	2	0.066	598	123.92	29	6.01
1903	MEAN STRENGTH 19,029.				MEAN STRENGTH 4,789.			
	Admissions.		Deaths.		Admissions.		Deaths.	
	Number.	Ratio.	Number.	Ratio.	Number.	Ratio.	Number.	Ratio.
	22	1.15	3	0.15	614	128.21	22	4.59

I am thoroughly of the opinion that the occurrence of these forty-five cases of beri-beri in the white troops was unnecessary, and not legitimately connected with their service in the tropics. In our enlisted personnel in the Philippines, as in all bodies of troops, there is a class imbued with low instincts, and individuals of this class will affiliate with the natives, and frequent their houses whenever opportunity will permit. Many members of

*See Reports of the Surgeon General of the Army for 1902 and 1903.

this class have native mistresses (*queridas*), who live with other natives, and these men will leave their barracks at night, whenever able, for the purpose of visiting their *dulcineas*. While in the native houses they virtually live like the natives themselves, and it is not unreasonable to suppose that, by frequenting houses infected with *beri-beri*, certain of these men, while racially not prone to contract the disease, may yet become infected. The American soldier in the tropics living in the proper barracks provided for him by the government, and serving under the careful hygienic supervision, exercised in his behalf by the Medical Department of the Army, should be virtually immune in so far as contracting *beri-beri* is concerned, and the non-effective ratio in our white troops from this cause should be zero. The native soldier, however, possesses the inherited susceptibility to *beri-beri* peculiar to the Asiatic race, and we must be prepared for a more or less marked admission ratio among our Philippine Scouts from this cause. I believe, however, that under improved conditions this non-effective ratio can, and will, be materially reduced. Heretofore in the Philippines the "Scouts" have, as a rule, been employed in outlying districts in widely separated companies, or smaller detachments. In consequence of their isolation and frequent change of base, it has not been possible to place these troops in as favorable surroundings as would have been the case had they been collected together in larger garrisons, where a better hygienic supervision could have been exercised. Lately these organizations have been concentrated and formed into battalions, with selected officers of the regular permanent establishment as battalion commanders, and an improvement in discipline, efficiency, hygienic surroundings, and health record may be expected to follow. It would, of course, be a very difficult matter to prevent native soldiers from mixing and affiliating with their fellow tribesmen, and contracting *beri-beri* and other diseases from such affiliation, but by quartering battalions of certain tribes in provinces, with the natives of which they are at feud from tribal reasons, such intercourse might naturally be lessened to a material degree. Thus a Tagalog battalion might be quartered in the Maccabeebe country and vice versa, and the

same method of interchange might be pursued with other tribes in well known enmity with each other.

The etiology of beri-beri is a highly mooted point in tropical pathology. The disease is considered by all observers to be a neuritis affecting the principal peripheral nerves, with a frequent involvement of the cardiac branches of the vagus, and the resulting nervous manifestations, as anaesthesia, hyperaesthesia and paralysis, as well as the cardiac symptoms, both functional and organic (dilatation of the right side of the heart), are well understood. Likewise the general types of the disease, the *dry* and *wet* forms, or in other words, the *atrophic* and *dropsical* varieties, are matters of common knowledge, while the symptoms, course, dangers, terminations and proper treatment are familiar to all educated practitioners of medicine in the Orient.

But what is the specific cause of the disease? Propound this question in any meeting of medical men in the Orient, and many and varied will be the theories advanced. While filling the position of chief surgeon of departments in the Southern Islands of the Philippine Archipelago, as part of my official duty, I was called upon to manage outbreaks of beri-beri in the native troops serving within my jurisdiction, and as a result of the experience thus gained I have become convinced that the disease is of *microbic origin, and a place infection*. It is immaterial whether, as Manson, we hold that the beri-beri germ has its habitation in the soil of infected spots, and generates a toxin, which, gaining entrance into the human body with the air inspired, or by means of the food ingested, causes the characteristic manifestations of the disease, or, like Scheube and Wright, believe that the hypothetical germ itself secures a lodgement in the bodies of its victims, and, within its hosts, produces the toxin capable of causing the disease, so long as we bear in mind the fact that a *place infection* is the starting point. *This is the key of the situation*, and as military surgeons, whose function it is to suppress epidemics of disease affecting the military personnel, we cannot exaggerate its importance, for an attempt to combat beri-beri in troops on a different basis is almost sure to result in failure.

The direct transmission of the disease from one individual to

another is denied by those having most experience in the management of the disease. This view is almost universally held by the medical officers of our service in the Philippines, and beri-beri cases in our native troops are treated throughout the Islands in the general medical wards of our military hospitals. I have never heard of a single instance in which the disease was transmitted from a beri-beri patient to another inmate of a hospital ward. The hypothetical beri-beri germ is prone to infect damp, ill-ventilated buildings, especially when overcrowding is permitted. The existence of the exciting cause of beri-beri in rice, fish, or other special articles of food, is highly improbable. An improved dietary, especially on the nitrogenous side, in the case of a rice eating community where beri-beri is endemic, or epidemic, is of advantage in increasing the resistance of the human economy to the encroachments of the disease, but that such dietetic change is of itself capable of putting an end to a prevailing infection is most unlikely. In the Japanese army and navy, where beri-beri was formerly prevalent, and where it is now, as is claimed comparatively under control, the opinion has prevailed that a changed dietary has been responsible for the marked improvement, but B. Scheube, late professor at the Medical School, Tokio, does not agree with this view, calling attention to the fact that other hygienic reforms were instituted at the same time, which were calculated to bring about such a result. As before noted, in the facts that beri-beri is a *place infection*, and that an improvement in the dietary on the nitrogenous side increases the resistance to the disease invasion, the military surgeon has the key to the suppression of the disease in native troops.

Remove the affected organizations to uninfected quarters, or localities, and increase the nitrogen component of the scout ration, and a speedy disappearance of beri-beri will follow. A change in the ration, while exposure, in consequence of continued occupation of infected barracks, still exists, will not be successful.

In every instance in which this rule was followed in the departments, of which I was chief surgeon, the disease was promptly suppressed.

[TO BE CONTINUED.]

FURTHER RESEARCHES INTO THE CAUSES WHICH TEND TO BRING ABOUT SERIOUS ACCIDENTS TO DIVERS.

BY LIEUTENANT COLONEL LUIGI ABBAMONDI,
SURGEON IN THE ROYAL ITALIAN NAVY.

WE know that the accidents to which a diver may be subjected are generally at the expense of the nervous system, and they appear under several forms: the cerebral, the spinal and more rarely, the cerebro-spinal. Besides this, we notice also frequently: bronchorrhagia, otorrhagia, epistaxis, sub-conjunctival ecchymosis, painful myopathies, arthralgia and so on.

Such accidents, excluding any from damage of the apparatus, may happen either when after a long or short time the diver has returned to the ordinary pressure, or when he is still under the water.

I will examine the two cases separately.

ACCIDENTS WHICH MAY HAPPEN AFTER THE RETURN TO THE ORDINARY PRESSURE.

Everybody knows the effects produced by the aerial hyperpressure on the organism, which are: augmentation of the pulmonary capacity, diminution of the frequency of respiration (to four respirations per one minute) easiness of inspiration in comparison with the expiration, augmentation of the inhalation of oxygen, diminution of the exhalation of carbonic acid, infrequent pulsation, etc. These as we see are the physiological effects of the compressed air, but when we use certain rules, as the fundamental one, that the hyperpressure and the decompression must be done slowly and gradually, the diver will not suffer any damage.

However, there are some cases that, notwithstanding the exact application of this rule, are not exempt from inconvenience.

Everybody knows that in the common diving apparatus (Denayrouse, Giffard system, etc.) the contents of the air is regulated by an automatic valve B (see Fig. 1) which is situated on the right side of the casque. When this valve is pressed by the head it lets out the excessive air, and when it is pressed by the hand from outside, it permits the necessary pressure to be established. However, this means to establish a just equilibrium between the internal pressure and the external, is not sure enough, especially for the diver who goes under the water for the first time. The diver to be able to walk without meeting a great resistance, and work on the bottom of the sea, must bend down, and in doing so he lets some air easily fly out, by pressing the valve with his head. Now an apprentice may let out more air than he ought, so his dress may become heavy and press him.

When this happens the frightened diver instead of signaling for more air, calls for help and is consequently rapidly hauled up, although it is prescribed to employ in ordinary cases, at least ten minutes for twenty meters of depth. Or else the diver wanting more air, shuts up the valve with his hand, from its external extremity (d) but not being quite skillful, he does not know how to regulate the necessary quantity of air he wants, so his dress swells enormously and he comes immediately to the surface like an air-balloon.

And even the skillful diver, if he cannot shut up the valve from its external extremity, for a sudden stopping of it, or for a numbness of his hands, proceeding by the ties closing too much his wrists, will be subjected to the same inconvenience, that is, to come suddenly to the surface: a rapid ascent which in predisposed persons may determine morbid manifestations more or less intense (paralyses, hemorrhages, etc.).

Such manifestations, as we know, are caused because the diver, during his work, being forced to live under the pressure of several atmospheres, introduces into the circulatory system a greater quantity of air, a part of which is fixed on the hemoglobin (oxyhemoglobin) and the other by the law of Dalton-Henry remains dissolved in the plasma of the blood, and the other liquids of the tissues.

This quantity of air is made free, as is well known, by the way of elimination (skin, lungs, digestive system) as the diver gradually comes back to the ordinary pressure. In this way the equilibrium between the internal and external pressure is easily established and the diver will never feel inconvenience of the kind. If, on the contrary, the decompression is rapid, there suddenly happens a lack of equilibrium between the internal and external pressure; the gas excessively dissolved in the blood, returning to the ordinary pressure, will come out in the same way as when we uncork a bottle containing an effervescent liquid. This sudden coming out explains to us the easy ruptures of the vessels (otorrhagia, bronchorrhagia, etc.).

Or else the gas, transported by the blood, under the form of little bubbles, acts like emboli (Bert's theory) in narrower vessels, and from the different localization of the gaseous emboli in the central nervous system, we have more or less dangerous phenomena (cramps, paralyses, etc.) that are generally transitory from the easy reabsorption of such emboli.

Besides the clinical observations, even the autopsies made by Leyden, P. Bert, Catsaras, etc., have revealed to us that the gaseous emboli are the cause of the morbid phenomena which appear after a rapid decompression.

Three years ago I verified an abundant quantity of gaseous bubbles, caused by a development of gas, in the heart and the ascending cava of some chickens dead after a rapid decompression, and after twelve to fifteen minutes of their stay in the experiment-room, and I verified these phenomena when the rapid decompression had been preceded by a very rapid compression.

When the rapid decompression had been preceded by a slow compression I very seldom remarked gaseous bubbles either in the heart or in the large vessels, and the rare times I did so, the gaseous bubbles were very few.

A similar deficiency I could nearly constantly observe even four months ago, with the aid of experiments that I executed on a greater number of chickens.

ACCIDENTS WHICH MAY HAPPEN BEFORE THE DIVER'S RETURN
TO ORDINARY PRESSURE, THAT IS, WHEN HE IS
UNDER THE WATER.

From the year 1885, the date of my embarking on the man-of-war *Venezia* (Torpedo-men School), in the cases when we could not attribute the unlucky accident, which had happened to the diver, to a bad functioning of the apparatus, I conceived the idea that those accidents might be caused by the rapid compression.

The greatest number of observers have especially directed their attention to the dangerous effects of instantaneous decompression, but it occurred to me that no research had formerly been done on the effects of the rapid hyperpressure on the diver. I had consequently the idea that a rapid descent might begin a series of more or less dangerous inconveniences.

But before I decided to make experiments in this direction, I wanted to be sure that from the diving apparatus and especially from the caoutchouc tubes, which serve for the transport of the air, no irrespirable substances developed themselves, it being possible that the caoutchouc, especially if recently vulcanized, may evolve some carbon disulphid, which is very harmful to the animal economy. For these reasons, four years ago, I resolved to make a series of experiments to prove if the combination of the sulphur of the caoutchouc with its hydrogen, would really produce hydrogen disulphid, which as Sapelier believes, would be the poisonous constituent of the carbon disulphid.

The numerous experiments I executed (and which I shall not describe for brevity sake) all showed a complete absence of hydrogen disulphid in the caoutchouc tubes of the diving apparatus.

Having thus excluded asphyxia of the divers from carbon disulphid, it remains now to examine if the rapid compression may be dangerous, and to what point.

Drasdorff (of St. Petersburg) has proved by many experiments, that the inspiration of the compressed air, at a middle degree, excites the active expansion of the lungs and diminishes the passages of the blood from the veins to the arteries. On the

contrary when the aerial compression is of a higher degree, the intrapulmonary vessel walls get exceedingly compressed in such a way that the blood can no more pass from the veins to the arteries.

Having premised that, we may deduce that a sudden augmentation of aerial pressure in the respiratory organs renders the free circulation and the gaseous exchange quite difficult, and it may produce such an obstacle in the pulmonary circulation as to determine in the brain a congestion for stasis, which would represent the first moment of the catastrophe.

Under this conviction I executed three years ago in the Royal Dock-Yard of *Maddalena* a first series of experiments on chickens, subjecting them to a very rapid compression under a pressure of five to seven atmospheres.

I used the diver's casque (see Fig. 1) as an experiment room (Staff-surgeon Curcio's apparatus). The casque "A" was soldered to a bronze disk (a) and this was firmly fixed, with screws, upon a table. The automatic valve (b) was closed up by a lever and did not let the air out during the compression, but by means of a spiral enginery the lever could be easily removed, permitting the compressed air to come out, in a few seconds.

The opening of the casque which in the diving apparatus is in connection with the air-pump, in this casque was connected by a tube (c) with a compressed air reservoir (d) one of those that commonly serve for charging silures, provided with valve (f) and manometer (g).

The chickens were introduced into the casque by the central opening (h), which was afterward shut up by a crystal fixed on a mobile frame screwed to the casque.

The results of these experiments and of those I executed this year, with the same method, on a greater number of chickens, in the Royal Dock-Yard of *Taranto* have been the following:

1. The chickens subjected to a rapid compression (one second) have almost constantly manifested in the experiment-room morbid phenomena (sommolence, lethargy, difficulty of breathing, excitation, etc.); but they have not presented them when the compression was slow (5 minutes).

2. The duration of the stay in the experiment-room (5-20 minutes) had not apparently a remarkably pernicious influence when the compression was gradual.

3. Rapid decompression (one second) on the chickens subjected to a pressure of five atmospheres, (equal to forty meters depth in the sea) only produced mortal effect, in the cases when it had been preceded by a rapid compression (one second).

4. The rapid decompression (one second) on the chickens subjected to a pressure of seven atmospheres (equal to sixty meters depth in the sea) nearly constantly produced mortal effects

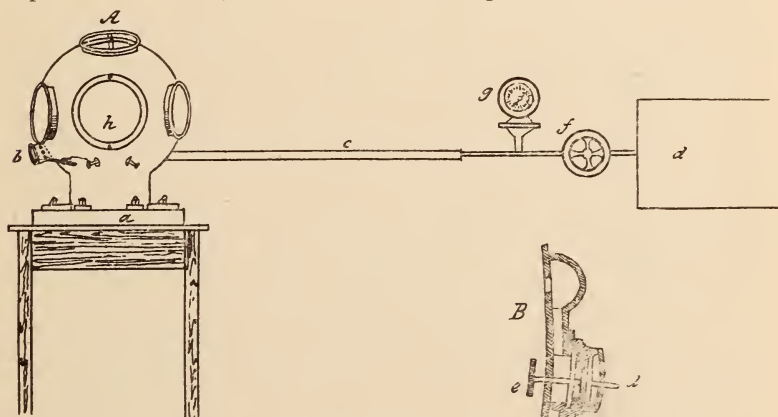


Fig. 1.—Diver's Casque as Experiment Room for Studying the Effects of Rapid Compression on Chickens.

A—Diver's-casque.

a—Bronze disk.

b—Automatic valve.

c—Compressed air tube.

d—Compressed air reservoir.

f—Valve.

g—Manometer.

h—Central opening.

B—Automatic valve in section.

e—Small central shaft. (*i*) Its external extremity.

when it had been preceded by a rapid compression (one second), and it rarely produced them when it had been preceded by a slow compression (five minutes).

“Having studied with Nissl's method (Captain Surgeon Dr. Battaglia's study) the different alterations of cellular structure in all the nervous central system of the chickens I had submitted to the different experiments, we noticed especially in the nervous cells of the chickens which remained for a longer time (8-15 min-

utes) in compressed air, remarkable and considerable differences compared by the same enlargement (730 diameters) with the structure of the nervous cells of the chickens at the physiological condition.

"In these (see Figs. 2, 3, 4, 5) are clear the parenchyma with its protoplasmic prolongations, and with its cylinderaxial prolongation, the nucleus with its chromatic substance, the nucleolus and Nissl's bodies. On the contrary in the other cells the nucleus is disappeared, the nucleolus is near to disappear and the chromatolysis of the cells is more accentuate."

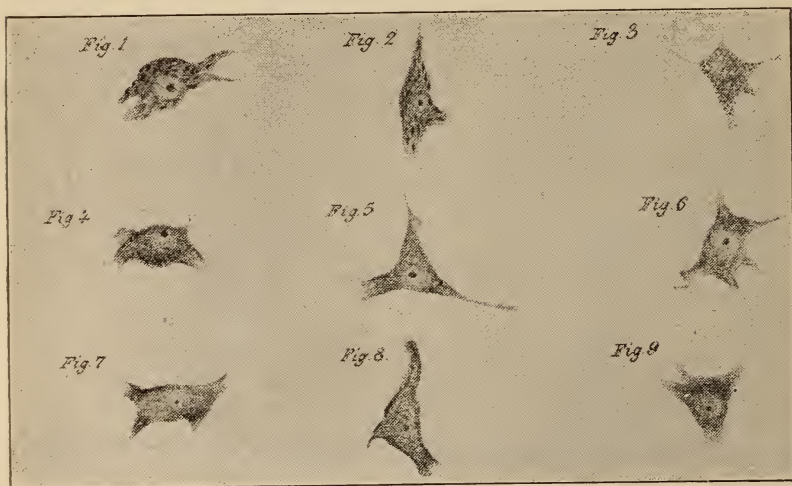


Fig. 2.—The effects of air pressure on the nervous system of chickens—
Cellule Somatochrome.

From the experiments I have made it evidently results that the different symptoms manifested by the chickens, namely: somnolence of some of them during their stay in the experiment-room, a somnolence from which we are not able to awake them, not even by striking repeatedly upon the casque; lethargy of the others, preceded by a state of excitation more or less intense and by an asthmatic respiration, are phenomena which must only be originated from the rapid compression, as they only appeared immediately after such trial and never after a gradual compression.

From this fact we may deduce that the instantaneous augmentation of aerial pressure in the lungs, having originated, as I formerly said, an hyperaemia for stasis of the brain, has determined phenomena of cerebral anexema, which have also aggravated the effects of rapid decompression. Having premised that, and coming to the practical case, I consider myself authorized to make the following considerations, to give myself a reasonable explication of the accidents that divers sometimes present.



Fig. 3.—The effects of air pressure on the nervous system of chickens—
Cellule Somatochrome.

We know that as we descend under the water we are subjected to an augmentation of pressure, so that at only twenty meters, we are under the pressure of three atmospheres. Now the descent is gradual, and the pump transmits to the apparatus the air proportioned to the external progressive pressure so as to have a constant equilibrium, the diver will not manifest any pathological symptoms; but if the descent is rapid, notwithstanding the constant equilibrium, cerebral phenomena more or less intense may happen from the congestion or stasis in the brain,

caused by the instantaneous aerial pressure in the respiratory organs.

On account of these cerebral disturbances the diver calls for help, or else suddenly fainting, falls on the bottom of the sea and cannot call for help, either by the conventional pullings of rope, nor by means of the telephonic apparatus which is in the casque. In both cases he is naturally hauled up in a hurry: a rapid ascent which, as we know, may cause more or less dangerous accidents. Or else the diver, falling faint on the bottom of the sea, may strike with his head on the automatic valve, which is in the right

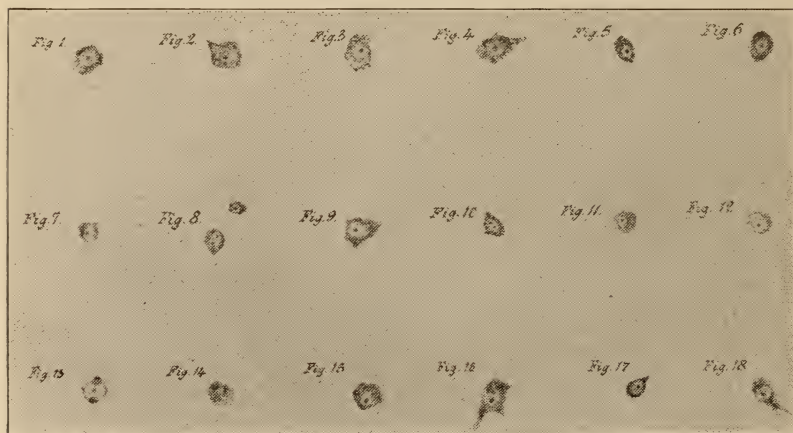


Fig. 4.—The effects of air pressure on the nervous system of chickens—
Cellule Citochrome.

side of the casque, and let all the air of the apparatus out. In such case the water of the sea, not finding in the diving dress a pressure which may counterbalance its own, will exercise such a compelling and expulsive action on the extremities and on the trunk as to make a great part of the blood regurgitate into the head and in the neck which are protected by the casque. The intense red, vinous color of the face, the œdema of the neck and of the head, the subconjunctival ecchymosis, the hemorrhage of the ears, of the oral mucous membrane, etc., in opposition to the anemia of the trunk and of the extremities, which is constantly

remarked in the autopsies, are symptoms which serve to confirm the rapid subtraction of the air with the cooperation of the external pressure to be the cause of the asphyxia.

But a rapid descent may have lethal effects even for a simple want of equilibrium between the external and the internal pressure of the apparatus. That may happen when the pump does not furnish sufficient and correspondent air to the progressive external pressure; therefore, there happens a compression of the water on the soft parts of the apparatus, anemia of the ex-

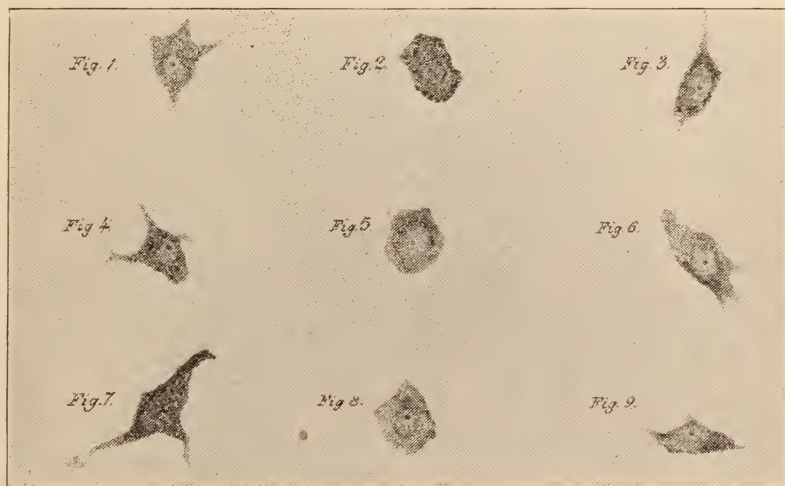


Fig. 5.—The effects of air pressure on the nervous system of chickens—
Cellule Binucleolate.

tremities and of the trunk, and consequent cerebral congestion. Such want of equilibrium of pressure might be fatal, if the diver, as I have proved before, would faint at the moment when the cerebral congestion begins, and he would in such a manner be unable to ask for more air, and so much the less to regulate its quantity by closing the valve.

I have remarked two cases in very skilful divers, which serve to convince me of the deplorable effects of a rapid descent; as, having imprudently descended rapidly under the water, one

of them died from asphyxia and the other ran the same risk.

In fact the diver who survived the unlucky accident, related to us afterwards, that when he had arrived to half way of his immersion (fifteen meters) he had felt himself fainting; he had tried to signal, but he had not been able to lift his arms to seize the rope, then he felt himself falling to the bottom of the sea; after that he did not remember anything but his return to the surface.

Having rapidly drawn the aforesaid diver up, and having taken off his casque, we verified some symptoms of grave asphyxia in him; tumefaction with intense cyanosis of all the head and neck, subconjunctivalecchymosis, epistaxis, otorrhagia, and great difficulty of breathing. No shock, no pain.

Having examined the apparatus after two unlucky accidents, we verified the perfect functionising of both of them.

CONCLUSION.

I think this study clearly demonstrates how much the rapid change of pressure and principally the rapid descent under several atmospheres, may be dangerous in the exercise of the diver. So it is necessary to remove by new means the possibility of these inconveniences.

It is true that the Regulation, foreseeing the danger, provides strict dispositions to avoid it, but the cases I have now related, though very rare to happen, are an instruction for us, for they show us that the man (guide) who submerges the diver by means of a rope, that this latter has bound around his waist, does not always succeed, even with all his good will in exactly executing the regular prescription; which is, that the diver must employ, at least, ten minutes to descend to a depth of twenty meters.

This may happen because it is rather difficult for the guide to exactly calculate the time required, or because he may involuntarily receive a kind of suggestion from the diver himself, for the confidence this one has acquired in his own trade, which as we have seen before, is, sometimes the cause of serious accidents. So it is opportune to substitute for the guide's and diver's will, a mechanism, rendering the acceleration of descent and of ascent impossible, beyond the established limit. In this aim, I have

devised with Mr. Radice, Chief-technical in the Royal Italian Navy, a hand-mill which makes the diver descend or mount one meter for thirty seconds, in accordance with the Italian Regulations.

Such an automatic apparatus (see Figs. 6, 7 and 8) must be fixed on the diver's boat, and will functionate in the following way. The spring-drum (A) wound up from left to right by the lever (N) by a watch mechanism (Morse type), contained in the box, impresses a movement of rotation also from left to right upon the cogwheel (B) which is united with the angle cog-wheel (C) by the axis (L). The two angle gears (D and E) manoeuvred by the lever (F and G), may functionate separately, being both running on the transverse axis (H).

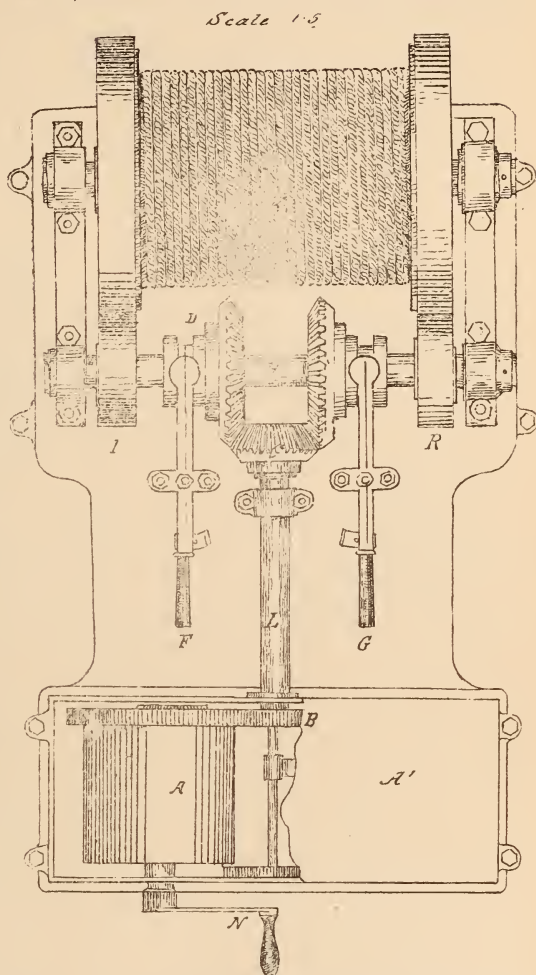


Fig. 6.—Automatic Hand Mill for Regulating the Descent and Ascent of the Diver.

- | | |
|--------------------------------------|----------------------------------|
| A—Spring drum. | D, E—Angle gears. |
| A'—Box containing a watch mechanism. | F, G—Levers. |
| B—Cog-wheel. | H—Transverse axis. |
| C—Angle cog-wheel. | I, R—Cog-wheels. |
| | K—Drum, extending over the side. |

When one of these gears (D or E) is functioning, the two cylindrical cogwheels (I or R) transmit an ascending or descending movement of rotation to the drum (K) placed over the side.

This movement will be descending if the angle cogwheel (D) is interlocked, and it will be ascending if only the cogwheel (E) is engaged. It is evident that when one of the two angle cogwheels is interlocked, the other must be disengaged from the cogwheel (C).

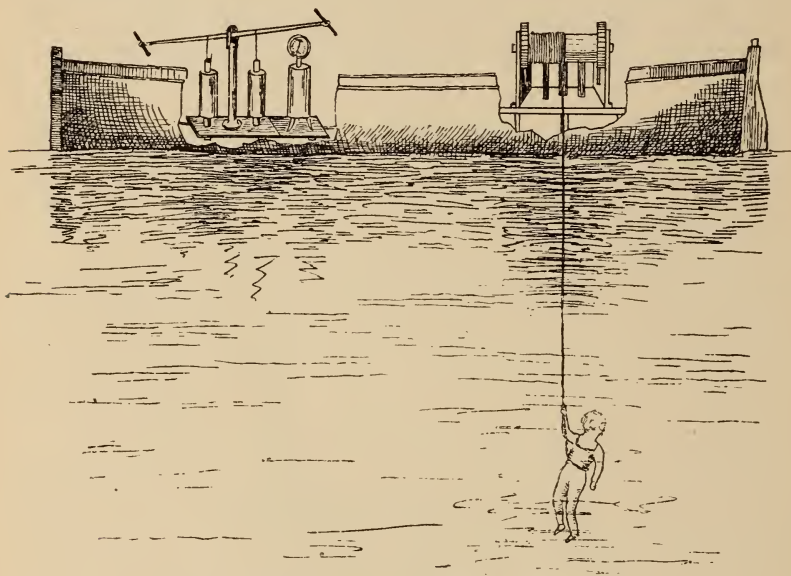


Fig. 7.—Diver's boat with automatic hand mill.

When finally one wants to stop the functioning of the ascent or descent, one makes use of a stop lever belonging to the watch mechanism (Morse type). It is understood that divers making use of this automatic apparatus, should never fail to carry a rope around their girdle, to hand them up quickly in case of necessity, either for eventual wastes in the apparatus or for other reasons.

Among the causes which may bring about serious accidents to divers, may be remarked also the bad functioning of the automatic valve which is not only difficult of management, but

it may also stop, and consequently be impossible to functionate.

A few years ago they tried to modify such a valve, and instead of giving issue to the excessive air by the movement of the head, they let it go out only from outside, by a cock which is placed in the anterior part of the casque. But such an improvement is not exempt from inconvenience, so that its application has hitherto been partial; so that even this inconvenience must be removed.

I think that it would be a very useful work to modify such a valve, and regulate by a mechanism the ascent and the descent of the diver, in the case that the hand-mill I have proposed, should for any technical reasons, not be practicable. I say this, because having thought of this mechanism only two months ago I had no time to propose its construction and to control, therefore, its perfect functioning.

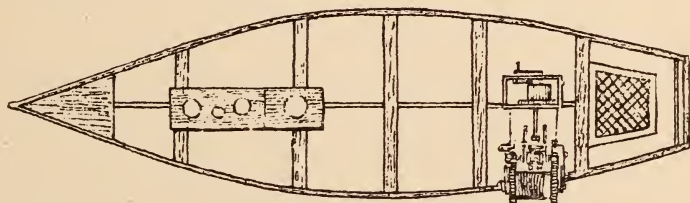


Fig. 8.—Diver's Boat from Above showing the Hand Mill extending over the side.

However, as soon as I shall be able to do so, I will make a proposal to the Ministry of the Royal Italian Navy, with a view to fix the above mentioned automatic apparatus in the diver-boat, if my trials turn out successfully.

Should I on the contrary fail in my enterprise, I would always be satisfied to have called the attention of competent people to the matter, in order that they may discover, by their skillfulness, a more proper mechanism to avoid the serious accidents of which we complain now-a-days, and to which divers are subject on account of sudden changes of pressure.

DISCUSSION.

THE PRESIDENT.—I should be very glad to hear a discussion of this very valuable paper.

SURGEON CHARLES FRANCIS STOKES, U.S.N.—I would be glad to

have Colonel Abbamondi tell us to what physical test the diver is subjected or what qualification is required of men about to be detailed for duty as divers in the Italian Navy. I should think it would be of great importance to know, and to examine especially the condition of the heart, the condition of the vessels, especially with reference to blood pressure, also the lung conditions, the condition of the kidneys, in short, the general makeup and stamina of the men, and in that way many accidents to which they are subject would be minimized or avoided.

MEDICAL DIRECTOR JOHN C. WISE, U.S.N.—This paper, gentlemen, I think is one of very great value. I do not suppose that persons generally understand how important it is in the naval service. So far as the building of dams, etc., on shore is concerned, you are all familiar with that feature. The officers of the Navy who attend the school at Newport are required to go down in diving bells and understand their management. Naval apprentices are also required to do this service, and there are men on board who are required to perform it. My own opinion is that Colonel Abbamondi has done a great service. He has not only complimented the Association by the reading of this paper, but he has also illuminated a subject that is not generally understood. My own observation at Newport was of such a character that, while I was not able to make any experiments, my attention was called to the fact that a strict examination was necessary along the line which Dr. Stokes has suggested. On one occasion an officer, who was supposed to be in good health, coming up, was attacked with haemoptysis and that was the first intimation that he was suffering with a pulmonary trouble. I am sure the entire Association is under obligation to Colonel Abbamondi for this splendid contribution to our program.

THE RED CROSS IN ITALY.

AS is usual the Italian Red Cross was authorized to participate in the grand manoeuvres of the army in 1902. War hospital No. 6 from Turin was erected at Belluno where it was operated. While there it was visited by many authorities on the subject, notably by Count Taverna, president of the Italian society. It was joined in a few days by mountain ambulance company No. 15. For the first time the utility of the bicycle was tested, in the case of a soldier who fell out during the march, and who was transported to the hospital in a remarkably short time. This test was repeated several times. This hospital was operated during the manoeuvres to the entire satisfaction of all concerned, and its personnel showed itself to be equal to the task assigned to it. The number of sick treated in the hospital was 112, and besides this 46 were treated by the ambulance company.—SAMUEL M. DELOFFRE.

“A SURE CURE FOR ASTHMA.”

By ALFRED TERRY SHORT, M.D.,

POLICE SURGEON OF MANILA; LATE CONTRACT SURGEON
IN THE UNITED STATES ARMY.

IN view of the long list of remedies recommended for the treatment of this disease and the unsatisfactory results often obtained, the addition of one more may be presumption on my part, for which I apologize.

During my service with the United States Army Medical Department as Contract Surgeon, on duty with native troops and stationed in a small town in Luzon, P. I., I became acquainted with a native family, intelligent, well-educated, and like a great many more, somewhat reduced in circumstances. I was consulted by them in regard to the case of a daughter, about the age of 19 years; she had been afflicted with asthma since childhood. The parents had spent large sums of money for treatment and travelled about taking her to different parts of the Island, but without obtaining anything but temporary relief, and had finally come to the conclusion that the disease was incurable, and nothing more had been done for the past year. The condition had remained about the same, rendering her practically an invalid. At this time, an elderly sister commenced giving her treatment, which she assured me consisted of the following, and which I had no reason to disbelieve: she had gone to the cemetery and selected some pieces of bone of the skull, which were dry and bleached, washed them and pulverized them in a mortar, added the powder to a quart bottle of water, and gave the patient a teaspoonful t. i. d.; by the time half of the mixture had been taken, her condition was very much improved. I saw the solution, which had a watery chalklike appearance; I was able to observe the results of the treatment; before the bottle was finished, the asthma had almost entirely disappeared and the treatment discontinued.

About two and a half years have elapsed since then, and to my knowledge, there has been no recurrence, she has continued in the best of health, living at home under practically the same

conditions, with the exception that now she has become an active member of the family, where before she was almost helpless; she has never known what the medicine consisted of. In what the potency of the treatment consisted, I will not attempt to state, but I can vouch for the truth of these facts.

TUBERCULOSIS IN NORWEGIAN MILITARY SCHOOLS.

IN *Norsk Tidsskrift for Militar Medicin*, Captain Bj. Arentz presents the results of investigations made by him during the five years from 1897 to 1901 at the Royal Guard School. The course at this School occupies three years. The Guard is recruited from the whole of Norway. During the five years 361 men entered the School and its discharge rate on account of tuberculosis, was 6.36 per cent of the strength.

Investigations were also made during the seven years from 1895 to 1901 at the School for Non-Commissioned Officers of the Second Infantry Brigade. During that time three hundred and seventy-eight men entered the School for a three years' course. The discharges on account of tuberculosis were 4.23 per cent of the strength. In civil life the mortality from tuberculosis among young men of the same age for the entire country is .027 per cent. The proportion of the ages of the men discharged on account of tuberculosis is shown in the following table:

AGE	GUARD SCHOOL	INFANTRY BRIGADE SCHOOL
Under 20	13%	37%
20-23	35%	37%
Over 23	52%	25%

The length of service of the men discharged was:

SERVICE	GUARD SCHOOL	INFANTRY BRIGADE SCHOOL
Under 1 year	17%	47%
2-3 years	22%	25%
2-3 years	61%	31%

The mortality from tuberculosis was, in the Royal Guard, 2.77 per cent and at the Second Infantry Brigade School 2.12 per cent.—HANS DAAE.

THE SERVICE OF NEGROES IN HOSPITAL CORPS DETACHMENTS.

BY CAPTAIN JOSEPH HERBERT FORD,
ASSISTANT SURGEON IN THE UNITED STATES ARMY.

THE disinclination of Caucasians and especially of those belonging to the Teutonic branch of the Aryan race to associate on terms of even quasi-equality with other, more primitive peoples, to a greater degree than may prove necessary, or expedient, is so well established that it must be accepted as a racial characteristic and dealt with as such. Though some persons who have never been brought into intimate association with the negro, decry on doctrinaire and theoretical grounds the social ostracism to which he is subjected by his white brother, their lack of practical knowledge of the subject nullifies their conclusions inspired by sentiment. This attitude of racial exclusiveness is indeed necessary for the preservation of the purity of the race, it minimizes miscegenation, and is therefore worthy of encouragement. Though within certain rather narrow limits the mingling of the blood of several sub-races has a vivifying influence upon their descendants (e.g. the English people, descended from Angles, Saxons, Danes, Normans, etc.,) the offspring resulting from the crossing of a Caucasian upon either a Turanian or Negro stock, are with rare exceptions, degenerates from the higher race.*

If the necessity for the preservation of race purity be admitted, and a corollary to this, that unnecessary social intercourse between the Negro and the Caucasian should be avoided, we reach the question: How may both races be represented to the

*Spencer attributes this degeneracy to the fact that each race in the course of innumerable generations has gradually evolved characteristics which adapt it most successfully to its peculiar environment, such characteristics being also mutually best adapted to each other. The infusion of another, dissimilar, strain, profoundly disturbs these adaptations, and all the peculiar racial attributes, mental, moral and physical are correspondingly distorted. It is only in exceptional cases and under more or less unique conditions that the distortions are harmonized and the offspring equal to the higher progenitor in civilizing qualities.

best advantage in the military establishment where camp and garrison life may occasion close personal associations? Since the negroes form no inconsiderable part of our body politic, it is just and expedient that they contribute by military service to its preservation and that they be encouraged to do this by adequate inducements, both civil and military. With civil inducements we are not here concerned, nor with military inducements in so far as they affect the line of the army where the question has already been solved, but merely with those relating to hospital corps detachments. While in other staff departments the number of negroes is comparatively very small, there is in the Hospital Corps a definite need for their services in considerable numbers but under equally definite conditions. These conditions are in brief that negroes in the Hospital Corps should serve with colored troops only, and that the detachment should then consist, like the associated companies of the line, of negroes only.

Since the number of men on duty in Hospital Corps detachments at posts of even regimental size is comparatively limited, and the opportunities which the members of the detachment enjoy for social diversion among themselves are correspondingly restricted, it naturally follows that they seek to broaden their social horizon by making acquaintanceships throughout the companies in the garrison. A spirit of harmony is thus fostered between the detachments and troops of the line, frequently having its inception through those combatants who come on sick report and the Hospital Corps men who there attend them. For obvious reasons this mutual amity is beneficial to the service and should be encouraged. If however, the men in the detachment be of one race and those in the companies of the line, be of another, they seldom associate more than proves necessary, a spirit of aloofness, grows up and sentiments of mutual dislike may be readily fomented and encouraged by mischief makers or by unwise administration. As the Hospital Corps detachment is smaller than the companies with which it serves, the members of that organization, restricted in their diversions if they be of another race, feel the social restraint to a greater degree than does the rest of the garrison. Under such circumstances, the men are prone to become dissatisfied, to

seek amusements outside the limits of the post, while in consequence of these and other cognate reasons, the quality of their work deteriorates. Even worse conditions for all concerned arise when white and colored men serve together in the same detachment for the enforced intimacy of association then serves to merely emphasize racial differences and mutual dissatisfaction. This lack of harmony becomes more apparent the more nearly the races are represented in the squad-room. If there be a small colored contingent, as is usually the case, it is practically ostracised, usually assigned to menial service and no hopes of promotion extended to it. Under these circumstances, it would indeed be strange if such men put forth their best efforts, or if the best class of colored soldiers should seek to transfer from the line whence the Hospital Corps is in great part recruited.

These disadvantages attendant upon the service of colored men in the corps are obviated, if as suggested, they be assigned to duty only in those detachments which are serving with colored troops and comprise the full quota of those detachments. By this means also, vacancies, in the non-commissioned personnel are opened to negroes; they are encouraged to hope for promotion and a much better class of men than is at present available may be expected to seek transfer from the line to the corps. Furthermore, such measures would tend to encourage harmony and contentment in the detachments and in the garrison at large, and by gratifying the social desires of the men, promote their interest in their work and stimulate discipline.

Among the disadvantages that present themselves, stands foremost the fact that colored non-commissioned officers are more prone to abuse their authority and that they have less initiative than have white men of equal rank. It is also asserted that they are less trustworthy, morally and mentally. All of these deficiencies, however, could be met and corrected by sharper scrutiny and more diligent service on the part of the medical officers, than might be required with white detachments, and by the promotion to the grade of Sergeant and Sergeant, 1st., class of only those men who have amply proven their fitness for promotion by the nature of their service in lower grades. That this objection is

by no means insuperable is evidenced by the fact that the last annual inspection of the troops in the Department of Texas, revealed the fact, voiced by the Commanding General of the Department, that the colored troops (whose non-commissioned officers were of course colored) were second to none in discipline, cleanliness and general efficiency. There is every reason to expect that colored Hospital Corps detachments, with smaller personnel than companies of the line, could be kept in equally desirable standing if the Surgeon of the post was vigilant and exercised a proper degree of individual surveillance.

The chief practical difficulties in the way of adopting this measure lie in the fact that the colored and white troops may serve together in the same camp or garrison, and that if colored regiments be assigned to duty in numerous small posts, their quota of Hospital Corps attendants would be greater than if they were serving in a few large ones and vice versa. In the former instance, it would appear to be better to have the corps consist entirely of colored men if the number of negro troops equals or exceeds that of the white contingent and of the white men if the reverse is the case. The second objection can be met by assigning to each colored regiment a definite quota of Hospital Corps men to be distributed as circumstances may require and of such a number as may reasonably be expected to prove necessary. As the number of Hospital Corps men required may vary according to the number of posts in which the colored troops are serving, the exact adaptation of a fixed number to meet mutable conditions is impossible, but the adaptation may be made at least general if not universal. Moreover there are reasons for believing that both difficulties are more theoretical than practical.

The foregoing conclusions, drawn from a practical study of the subject, were inspired by service with white and colored troops in the same garrison and by service in association with colored troops alone. In both these situations, so far as possible, they have been given practical application and the success with which the measures then introduced have been attended appears to justify a broader investigation of the subject in other garrisons, and at least a tentative solution of the question along the lines here indicated.

THE GRAYSON-GRAEME HAMMOCK MOSQUITO NET

By CARY T. GRAYSON, M.D.

ASSISTANT SURGEON IN THE UNITED STATES NAVY.

THE recent severe epidemic of yellow fever in the city of New Orleans, Louisiana, and contiguous territory, brought to our minds the necessity of protecting the crews of any men-of-war or merchant ships which might visit that port or other infected localities, against that terrible scourge. The recent investigations in regard to the part played by the *stegomyia fasciata* in the transmission of yellow fever made by Reed, Carroll, and Lazear, convinced us that the simplest method of achieving this end would be the protection of the crews, so far as possible, from the attacks of this mosquito. The consensus of medical opinion being that the *stegomyia fasciata* rarely attacks save after nightfall, it is apparent that, if we can protect the seaman during the night, he is reasonably safe against infection. It is well known that kerosene oil and other substances are at present being used in many localities to exterminate the mosquito, but owing to the fact that ships may visit any port where no such precautions have been taken, the mosquito net becomes a necessity. The net is necessary in any port, even where the most stringent measures of extermination have been taken, as many mosquitoes must necessarily escape and thus prove a menace.

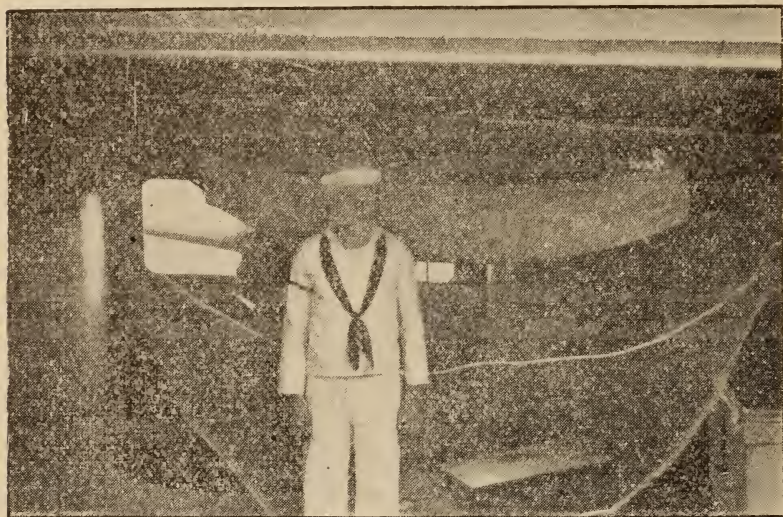
The discovery of Ross in 1898 that the *anopheles* mosquito transmitted malaria, indicates the value of the net for the prevention of this disease. As the investigation of the rôle of the mosquito in the transmission of disease is yet in its infancy, it is more than likely that many of the almost countless varieties of mosquito (those already known numbering about 250) will be proven to be the communicators of many other diseases besides yellow fever and malaria.

The irritation and consequent loss of sleep caused by the

mosquito is too well known and appreciated to require more than a mention.

There are at present about 35,000 men in the United States Navy, practically all of whom are at sea in cruising ships, in all parts of the world, and as no mosquito nets are at present supplied them, a large number of them are constantly exposed to infection by mosquitoes.

A mosquito net ready for the use of men on board ship must be simple, strong, efficient, compact, easily stowed away, and



Hammock Mosquito Net Ready for Use.

cheap. The net which we have designed, possesses, we believe, all of these features.

The net is roughly rectangular in shape, with a backbone of cord passing through the tape binding along its upper edge, and with a few small lead weights secured to its lower edge at intervals. There is a snap hook secured to one end of the back bone cord, which is hooked into one of the hammock rings, the cord being hauled taut and hitched to the other hammock ring. The net then hangs straight down on one side of the hammock. At

each upper corner of the hammock is a triangular cloth strengthening piece, on which are sewn a hook and three eyes, the latter in line, spaced one inch apart. Each strengthening piece is passed around the clews of the hammock near the ring, and the hook is hooked into which-ever eye gives a snug fit, leaving the net in the position shown in Fig. 1, ready for use. The man gets into the hammock, and reaching over the side, seizes the net and throws it over the back bone cord. The lower edge of the net is kept from blowing up by the lead weights secured to it.



Hammock Mosquito Net in Use.

The occupant of the hammock is thus completely enclosed in the net, which the cord keeps clear of his face, as shown in Fig. 2. When he wants to get out of the hammock, all he has to do is to throw off the upper part of the net and jump out. As there are no rods or wires to this hammock mosquito net, it may be rolled into a very small bundle and lashed up with the hammock.

Although the net was especially designed for sailors' hammocks, it may of course be used with the ordinary types of sportsmen's, travelers' or outing hammocks.

Contemporary Comment.

THE MILITARY HYGIENE OF WATER,—THE ORDINARY SOLDIER'S DRINK*.

By MAJOR SALLE,

SURGEON IN THE FRENCH ARMY.

TRANSLATED BY LIEUTENANT JOHN R. SLATTERY,
CORPS OF ENGINEERS, OF THE UNITED STATES ARMY.

ON the 25th of November, 1902, while speaking in the Upper Chamber, Senator Gotteron voiced the emotion he had felt when he compared the mortality of the German Army with that of the French Army. Although the figures upon which he based his statements were erroneous, it is perhaps due to this numerical error (immediately recognized), that his speech finally called to the attention of the country and of the Chamber, the question which the military physicians have tried in vain to bring up for a long time.

In answer to this summons, and in order to calm the public indignation, justly aroused, they have set themselves to seeking the means necessary to reduce this sickness (although already reduced one half in the past twenty years), and the health of our soldiers has been looked into, by those in high authority, with all the interest befitting a problem of such importance.

It is not to be said that nothing has been done in this line, but that there remains so much to be done, as to the method of recruiting, healthful barracks in healthful localities, drill and physical exercises, under medical control, sufficient nourishment, moral hygiene, etc., etc.

In the domain of prophylactic military hygiene, the question of drinking water is the only one which the medical corps of the

*Translated from *Armée et Marine*, April 21, 1904, for the Second Division of the U.S. Army General Staff.

army has been able to bring up officially—and this matter was fortunately solved fifteen years ago, thanks to the Minister of War M. de Freycinct.

It would seem that it might be interesting and useful for the readers of the *Armée et Marine*, to show what has been done in this line, and how, at the present time, the distribution of suitable drinking water to our soldiers in garrisons and camps of instruction, is effected.

Pure water is more necessary to soldiers than to any one else, because they are obliged to drink it just as a bird is; now drinking water can contain pathogenic germs, and consequently be the cause of infectious maladies, particularly of typhoid fever. This disease decimated our troops to such a point, that attention was aroused to the study of its cause. The disease diminished from the very day when it was possible to give the soldiers spring water, or in default of that, water filtered by the Chamberland filters. The results obtained, were equally quick in Rheims, Bar le Duc, Clermont and Paris.

In 1886 and 1887, the mean number of cases per year in Paris, was 1,270, with 139 deaths; while in 1888, there were only 525. What then had taken place?

Under the pressure of the Board of Public Health, and the wise urging of its recorder, Medical Inspector General Collin, and backed up also by the Government, the city which up until that time had give our men only Seine water, and above all, water polluted by the Ourcq, finally agreed to have water of the Vanne spring introduced into the barracks. This change having been completed in April 1888, the result was immediate.

The efficiency of this humanitarian measure became more evident still in 1889, and the following year, when in the summer, without warning, the water Department substituted Seine water for spring water.

Today, there is no excuse for this continuing. In the first place, the city of Paris is abundantly supplied with spring water, in 1900 it was supplying more than 300 litres per day, per capita (Bechmann); nevertheless, it must be said that this water may sometimes become dangerous through pollution by surface

waters. In February, 1904, the water was polluted by that of the Avre, causing a marked increase in the number of cases of typhoid in the city. If, however, scarcity or pollution requires the temporary substitution of Seine water, or necessitates the filtering of spring water, the military authorities should be notified and should be able to take the necessary precautionary measures. This was the case upon the outbreak of the violent epidemic now existing in Paris.

Now, what are these measures? What steps does the army take, to assure protection against suspected and dangerous drinking waters?

1. *Suspected Waters.* As soon as water is suspected, it is submitted to a bacteriological examination at the laboratory of Val-de-Grace. The taking and the transfer of the sample is surrounded with every known precaution; the military physicians have conformed since 1888 to very precise regulations which were made for them by a special note appended to their regulations.

At Val-de-Grace, the professors and fellows of hygiene, proceed to make a quantitative and qualitative analysis, that is, they make an enumeration of the species of bacteria, but not a total enumeration; above all, they search for pathogenic bacteria.

2. *Waters temporarily dangerous.* When water, ordinarily pure, becomes accidentally polluted, the military authorities direct its sterilization by boiling. For simplicity and safety, this is the best method of procedure, when there is no sterilizing apparatus available.

By adding a small quantity of coffee or tea (upon the order of the Commanding General of the Army Corps or of the Minister) to this boiled water, which has to be drunk hot even in summer time, it is made more palatable and at the same time, more stimulating. It also, this way, quenches the thirst much better than fresh water, which on the contrary, has just the opposite effect especially when ice or alcohol has been added to it. On this point, one can get points from the Orientals.

It is also possible to purify polluted waters by using certain chemical substances, the employment of which is based upon their property of oxidizing organic materials. Ozone and perchloride

of chloral (Berge's method), give perfect results, but the gases necessary for their production leave a peculiar odor.

Permanganate of potash (Lapeyre's method) merits all the praise which is given it. Its employment is simple and quick, but less so, perhaps, than that of free iodine, which we owe to the learned professor of hygiene, of Val-de-Grace, Medical Inspector Viallard.

3. *Water dangerous at all times.* When the water supplied to the troops, is not sufficiently pure, sterilizing apparatus is installed. The first used and the best known are the Chamberland filters, which were installed in pursuance of ministerial decrees, dated July 22, 1889, and February 7, 1890. They are composed of variable numbers of porcelain bougies or cylinders, used either singly or in batteries.

They have given most satisfactory results, but more has been demanded of them than they could do.

Polluted drinking water is not the only cause of the infectious diseases which attack soldiers, particularly of typhoid fever. The causes are many. When by the wide use of Chamberland filters, they had decreased, by one half, the typhoid morbidity, and when it was seen that this proportion remained fixed, with no tendency to decrease, certain hygienists, among them those who were at the beginning the most enthusiastic, adhering always to the water theory as the only origin of typhoid fever, deplored the failure of these filters to which they had wrongly attributed absolute preventive power (Medical Inspector Kelch).

This feeling was so strong that on the 7th of July, 1903, the Minister of War, solicitous for the health of the troops, put to the Academy of Medicine, the question as to whether or not it was advisable to replace these filters by sterilizers.

Following the conclusions of its recorder, Medical Inspector Vallin of the Reserve, the learned Board unanimously replied on the 10th of November, that it was best to supply all barracks with water from a pure and carefully watched spring; that if this could not be done, the water should be sterilized, and that, while not giving up "the filters which give excellent results, when they are well looked after and carefully watched," it was advis-

able to multiply the experiments with heat sterilizers,—taking care “to retain or restore all the original freshness to the sterilized water.” The experiments called for by the academy, are now being made, but without waiting longer, the Minister has just decided, with good reason, that at stations where there are epidemics of infectious diseases, use should be made of sterilizers that operate by heat.

Some years ago hygienists, associated with sanitary engineers, invented a simple and practical apparatus, easily operated, in which water is sterilized under pressure, by dry heat.

It is proper to cite here the Vaillard-Desmaroux type, from which water flows in a constant stream, which is able to supply from 250 to 1,000 litres per hour, according to the model, the filtered water being absolutely pure, and retaining all its original freshness. Apparatus of this kind is mounted* upon a metal carriage, with wheels so as to be transportable.

The China expedition corps have six of these, as well as some Lefevre filter carriages, some Lapeyre filters, and some Chamberland batteries. All these filters have worked with regularity, and have given complete satisfaction.

HOW DRINKING WATER IS SUPPLIED TO BARRACKS.

Water posts. At stations where there is only one kind of water, no particular measures are taken if it is pure and of good quality.

If it is bad, and if the necessity of purifying it before use, has become recognized, all the water faucets are marked with a sign plainly marked, “*The drinking of this water is prohibited,*” or better, “*This water is very dangerous to drink.*”

* If, in the barracks, there are two water supply systems, one of drinking water, and the other of water for animals, or cleaning purposes, lavatories, etc., the water faucets of these also are marked by the same sign, while the faucets supplying pure water, are marked by the sign “*Good drinking water.*” These last are the objects of special surveillance in order to prevent waste. Each barracks is supplied with drinking water, at the rate of thirty litres per man, per day (Dec. 6, 1888).

Filters. When it is deemed necessary to install Chamberland filters, the filter bougies or cylinders are located in a special room, arranged differently by the engineers, according to whether the pressure in the system, is or is not sufficient; whether the filtered water is to be collected in individual receptacles, or collected in a single reservoir.

When there is a filter room, entrance into it is forbidden, so as to prevent accidental pollution. Only those who have charge of it are permitted to enter, that is, the doctors and their assistants. When there is no special filter room, the filter bougies are locked up in a sort of cupboard.

The room to which the men have access to get water, is open only at certain hours, fixed by the commanding officer, in order to prevent waste of the filtered water. This water is taken by them in special receptacles, which vary according to whether they are to be taken to the mess rooms, or to the squad rooms.

The criticism, to be made of the General Order which provides for the installation of filters, and the rules and regulations which govern the use of the water, is that the filter rooms are not generally sufficiently protected against heat; and consequently the filtered water is not sufficiently cool, but is often quite the contrary, which, during the summer, results in a natural distaste for the water, on the part of the men, who prefer to drink ordinary unfiltered water, which is cooler and pleasanter to drink. On the other hand, the too strict regulating of the hour of opening the doors, brings about the result that soldiers, returning from drill, thirsty, cannot obtain fresh water and therefore drink unfiltered water rather than drink the water in the pitchers, in the squad rooms, which, if there is any, is warm and distasteful.

In every squad room, there is a pitcher which theoretically is protected by a cover and is placed upon a shelf, which elevates it above the floor. In practice, it is sometimes upon the shelf, but the cover often hangs at its side.

Whatever attention the non-commissioned officers and medical officers give to this matter, it is almost impossible to keep these pitchers covered. If uncovered, dust and germs can fall into the pitcher, so that it is useless to fill it with filtered water. The

only possible solution seems to be the entire suppression of this old fashioned pitcher method. It would not seem difficult to find a better method of supplying drinking water to the occupants of each barrack.

Sterilization of Filters, Bougies, and Pitchers. In working constantly, the porous walls of the filter cylinders quickly become dirty. This results in a diminished filtering capacity, and the bacteria, caught in the interior passages quickly multiply, and cultivate there.

For these two reasons, the cylinders (bougies) of polished porcelain, demand regular and minute care. While they are being cleaned, they may get cracked, and are then useless.

They require then, constant watching. This surveillance and care fall upon the medical officers. The assistants given them require even greater surveillance, for they do not understand the necessity of the details which they are to carry out, and they neglect them as soon as the doctor's back is turned. Through their carelessness, there is often breakage and neglect. Filters do not work as they should, and it is not astonishing that they have often caused complaint.

In accordance with the idea set forth by the editor-in-chief of *Le Caducée* as to a way to avoid this difficulty, it would seem that it would be easy to give the care of the filters to the house which furnishes them which would operate them itself, or through its representatives, under military medical supervision. As it would desire that its apparatus should not give rise to complaint, or criticism, and as it would be to its direct interest to replace as few as possible of the porcelain cylinders, the working of the service regularly and to the satisfaction of all parties would be assured.

The cylinders ought to be sterilized at regular intervals. The most efficacious method, which has also the advantage of cleaning them without other manipulation, is to expose them to a dry heat, of from 280° to 300° for twenty minutes, every ten days (every week, in case of epidemic). It is easy to follow the method which has been outlined by Professor Vincent of Val-de-Grace, by using the ovens of furnaces or cook stoves, or by put-

ting them in the ordinary baker's oven, where they are easily attended to. If these means are not available, it is necessary to scrub them, and then sterilize them, either by putting them on the stove, or by boiling them, using a receptacle, to hold the cylinders, preferably a washing pan, such as that invented, by Major Schmidt of the Medical Corps.

As for the pitchers in the squad rooms, which have to be disinfected, there is, alas, no better system than to put them every week in a disinfecting oven, where for twenty minutes, they remain, exposed to a damp heat of 115 degrees.

If there is no oven in the garrison suitable for this purpose a cold solution of permanganate of potash, five grams to the litre, should be used, in which the pitchers are left for thirty minutes. This method is safe and it is also very cheap as the liquid can be used for a long time.

Despite every precaution taken, epidemics will sometimes break out in garrisons. In order not to be taken unprepared, it would perhaps be well for each army corps to have a movable sterilizing apparatus, as well as a disinfecting stove.

This material, if kept at the headquarters of the Army Corps, could at the very first outbreak, be placed at the disposal of the infected troops. The rapidity of taking prophylactic measures is an important element in their success.

But it must be said that despite all the care that may be taken and all that can be taken, it will not be possible to entirely prevent disease, unless the carelessness and lack of foresight of soldiers is greatly reduced. Their carelessness often brings about unhappy results.

It is better to warn persons from the earliest age, of the danger to which they expose themselves in life, by not observing the principal rules of health. The teaching of these rules is imposed upon those who love them, and officers should put into practice, the lessons already taught in the family and at school. Working for the Army is working for the Nation.

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Editorial Expression.

FIRST AID DOGS.

THE value of the dog in military medical field service has been practically tested, both in the South African War, and more recently in the operations in the far east. Much interest has been manifested in the question in Sweden and a society has been organized for the study of the modifica-



A Dog Barking and Bringing up a Litter Squad to a Wounded Man whom he has Discovered.

tions needed to adapt the plan to Swedish conditions. In Sweden the first aid dog would be of particular value on account of the deep forests and extensive marches found in that country.

Dr Lilliehook *Tidskrift i militar Halsovard* believes that the Scotch collie is the preferable strain for first aid purposes

because of its keenness of scent. But he considers it not at all impossible to train a native strain of dogs to do as well as the collie. After some notes upon the training of the first aid dogs he emphasizes the importance of not requiring too complicated work of them.

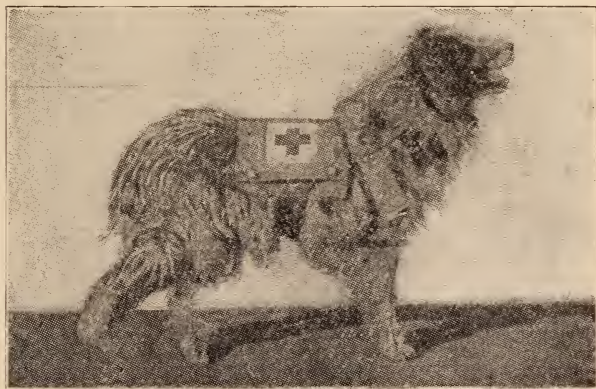


German First Aid Dog with Attendant

In some countries the dogs are sometimes employed both to locate and transport the wounded. Dr. Lilliehook believes that it is preferable to use them only in searching for patients. They should be trained to remain by the wounded man, whom they have discovered, and bark until aid arrives.

The equipment favored by the author is, in its essential features, that employed in the Ger-

man service; an ordinary collar, preferably of leather; a harness of light impermeable cotton stuff; two pouches marked with the Geneva Cross and containing cordials, dressing materials and two days rations for the dog; and a small carpet



Swedish First Aid Dog.

or cover carried in a roll upon the shoulder and designed for use in cases where the dog has to pass the night on the ground in the cold or snow. The harness, which weighs 1 kg. 700, should not be carried by the dog except in case of absolute necessity.

The first aid dog has been the subject of much study and experiment in Germany and a society has been formed, to which reference has been made in the JOURNAL, for the purpose of developing a breed of dog suitable for the purpose, and educating them for the proposed duty. Among the Italians similar work



Field Dressing at Liao Yang, with First Aid Dog.

has been done, particularly at the lands of Captain Ernesto Ciotola. While, so far as we are aware, no work has been done by the regular forces in England in this direction, a number of important experiments have been made by officers of the volunteers with excellent results.

In Manchuria a number of dogs, both of English and German training, have been found of material value and have been utilized to the very best advantage. Full reports concerning their use are not yet at hand, but the advance statements are convincing with regard to the use of the dog.

ARMY MEDICAL CORPS EXAMINATIONS.

PRELIMINARY examinations for appointment of Assistant Surgeons in the Army will be held on May 1st and July 31st, 1906, at points to be hereafter designated.

Permission to appear for examination can be obtained upon application to the Surgeon General, U. S. Army, Washington, D. C., from whom full information concerning the examination can be procured. The essential requirements to securing an invitation are that the applicant shall be a citizen of the United States, shall be between twenty-two and thirty years of age a graduate of a medical school legally authorized to confer the degree of doctor of medicine, shall be of good moral character and habits, and shall have had at least one year's hospital training or its equivalent in practice. The examinations will be held concurrently throughout the country at points where boards can be convened. Due consideration will be given to the localities from which applications are received, in order to lessen the traveling expenses of applicants as much as possible.

In order to perfect all necessary arrangements for the examinations of May 1st, applications must be complete and in possession of the Surgeon General on or before April 1st. Early attention is therefore enjoined upon all intended applicants.

There are at present twenty-five vacancies in the Medical Corps of the Army.

MILITARY STATISTICS OF TYPHOID.

IN the discussion of comparisons, Simonin* cites the results from civil hospitals in Europe and London, in the mortality of typhoid, from 1901 to 1904. In four instances, the French civil hospitals show 18 per cent, the London civil hospitals 18.5 per cent, the Vienna, 18.5 to 22.2 per cent, and the Leipzig 12.7 to 18.5 per cent. These figures show a marked contrast to the statistics from military hospitals abroad as well as those in the United States. The results emphasize again that hydrotherapy is the method of choice in lowering the mortality from typhoid fever.—CHARLES S. BUTLER.

**Le Caducée*, August 19, 1905.

News of the Services.

Lieutenant Colonel L. B. Almy, C.N.G., suffered amputation of the thigh on January 13, for dry gangrene. His many friends in the Association will be glad to learn that he rallied excellently from the operation and is making a rapid recovery.

P. A. Surgeon J. F. Anderson, P.H. & M.H.S., reassigned to the Hygienic Laboratory.

Surgeon G. L. Angeny, U.S.N., commissioned with the rank of Lieutenant Commander from April 24, 1905.

Captain Percy M. Ashburn, U.S.A., appointed to a Board detailed for the purpose of studying tropical diseases as they exist in the Philippines.

Captain Frank C. Baker, U.S.A., promoted from First Lieutenant, February 4, 1906.

P. A. Surgeon M. W. Baker, U.S.N., commissioned from May 10, 1905.

Lieutenant Charles Norton Barney, U.S.A., ordered before the Fort Bayard Promotion Board.

Surgeon W. H. Bell, U.S.N., commissioned from May 20, 1905, and ordered to the *Nevada*.

Surgeon F. L. Benton, U.S.N., commissioned with the rank of Lieutenant Commander from March 3, 1903.

Medical Director D. N. Bertollette, U.S.N., commissioned with rank of Captain from April 5, 1905.

Medical Inspector H. G. Beyer, U.S.N., commissioned with the rank of Commander from April 5, 1905.

Lieutenant H. D. Bloombergh, U.S.A., ordered to Fort Leavenworth.

P. A. Surgeon F. M. Bogan, U.S.N., ordered from the Yokohama Naval Hospital home to await orders.

Surgeon W. C. Braisted, U.S.N., ordered from the Bureau to the Naval Medical School, with additional duty as a member of the Anatomical Board of the District of Columbia.

Lieutenant Colonel Louis Brechemin, U.S.A., granted one month's sick leave.

Lieutenant Colonel Albert H. Briggs, N.G.N.Y., President of the Association of Military Surgeons, has been elected President of the Erie County (N.Y.) Medical Society for 1906.

P. A. Surgeon E. M. Brown, U.S.N., commissioned from May 8, 1905.

Dr. Wilmont E. Brown, U.S.A., ordered from Fort Walla Walla to temporary duty at Boise Barracks.

Major George E. Bushnell, U.S.A., appointed President of a Promotion Board at Fort Bayard, and granted one month's leave.

Lieutenant James Carroll, U.S.A., whose great services to the nation, in connection with the identification of the means of transmission and suppression of yellow fever, is being urged for proper recognition by the government. The magnificent work of Lieutenant Carroll is deserving of the most generous treatment and his promotion to the grade of Major in the Medical Department would be a very modest tribute to his self-sacrificing achievements.

Dr. Samuel K. Carson, U.S.A., left New York for the Philippines on the transport *McClellan*.

Major Joseph T. Clarke, U.S.A., granted three months leave.

Captain J. B. Clayton, U.S.A., ordered for temporary duty at the Fort Leavenworth Military Prison.

Surgeon F. C. Cook, U.S.N., ordered from the *Nevada* to the Naval Academy.

Lieutenant Colonel William H. Corbusier, U.S.A., ordered to Vancouver Barracks as Chief Surgeon of the Department of the Columbia and granted three months leave.

P. A. Surgeon G. M. Corput, P.H. & M.H.S., ordered to Kenner and other places in Louisiana for special temporary duty and returned to New Orleans.

Lieutenant Charles F. Craig, U.S.A., appointed to a Board detailed for the purpose of studying tropical diseases as they exist in the Philippines.

Captain Frederick A. Dale, U.S.A., promoted from Lieutenant, February 11, 1906.

Assistant Surgeon F. W. S. Dean, U.S.N., ordered from the *Frolic* to the *Oregon*.

Assistant Surgeon J. P. De Bruler, U.S.N., ordered from the *Elcano* to the *Oregon*.

Surgeon C. M. De Valin, U.S.N., commissioned with the rank of Lieutenant Commander from March 3, 1903.

Captain J. R. Devereux, U.S.A., ordered to accompany troops from Fort Logan to San Francisco and to return.

Dr. Clarence F. Dickenson, U.S.A., ordered to accompany troops from Fort Logan to San Francisco and thence to the Philippines.

Dr. G. Parker Dillon, U.S.A., ordered from the Presidio General Hospital to the Hot Springs General Hospital for treatment.

Dr. James C. Dougherty, U.S.A., ordered to accompany the 8th Infantry to the Philippines and report for duty there.

Assistant Surgeon J. R. Dykes, U.S.N., ordered from the *Baltimore* to the *Oregon*.

Captain James F. Edwards, late Assistant Surgeon U.S. Army, is now located at 281 Gallia St., Portsmouth, Ohio.

Surgeon A. Farenholt, U.S.N., ordered from the *Raleigh* to the *Oregon*.

Captain Charles W. Farr, U.S.A., promoted from Lieutenant, February 11, 1906.

Captain Powell C. Fauntleroy, U.S.A., ordered from Fort Porter to New York for temporary duty as Surgeon on the transport *Sumner* en route to the West Indies and return.

Surgeon J. G. Field, U.S.N., ordered from the *Celtic* home to await orders.

Captain Clyde S. Ford, U.S.A., ordered from Fort Barrancas to the New York Medical Supply Depot.

P. A. Surgeon M. H. Foster, P.H.&M.H.S., granted one month's leave.

General George Ryerson Fowler, Chief Surgeon N.G.N.Y., died on February 5th, of appendicitis. He was taken ill while en route to Albany to attend the annual meeting of the New York State Medical Society. When his first symptoms developed, he did not suspect that he was suffering from appendicitis, and when his physician suggested such a condition he scouted the idea. A consultation on the second day however confirmed the diagnosis, whereupon he was removed to the Albany Hospital and operated upon, January 29th, about thirty-six hours after the onset of the attack. The appendix was found already gangrenous and lying behind the cecum. He stood the operation well, but developed a spreading peritonitis of mild form, against which he was unable to contend; a second enterostomy was done for the relief of the consequent bowel distention, while systematic stomach washings and every measure possible were instituted to prolong his life, all of which was unavailing. General Fowler was an authority upon appendicitis, and the author of a standard text-book upon the subject. His military service extended over a period of nearly thirty years, during which he served in every grade in the New York National Guard and also as a chief surgeon of volunteers during the Spanish War.

P. A. Surgeon G. F. Freeman U.S.N., ordered from the Cavite Naval Station to the *Raleigh*.

Surgeon F. M. Furlong, U.S.N., commissioned with the rank of Lieutenant Commander from June 20, 1903.

Major Charles M. Gandy, U.S.A., ordered to accompany troops from Fort Wayne to New York City and to return.

Medical Inspector J. E. Gardiner, U.S.N., commissioned with the rank of Commander from December 17, 1905.

Surgeon W. M. Garton, U.S.N., commissioned with the rank of Lieutenant Commander from March 12, 1903.

Surgeon James D. Gatewood, U.S.N., appointed member of the joint Army and Navy First Aid Board.

Lieutenant Colonel William W. Gray, U.S.A., granted one month's leave.

P. A. Surgeon J. B. Greene, P.H.&M.H.S., granted leave for two months and twelve days.

Assistant Surgeon C. C. Grieve, U.S.N., ordered from the *Oregon* to the *Frolic*.

General Jefferson Davis Griffith, N.G.Mo., has been appointed a delegate to represent the Association of Military Surgeons at the XVth International Medical Congress and is now *en route*.

Surgeon J. A. Guthrie, U.S.N., commissioned with the rank of Lieutenant Commander from December 15, 1904.

Dr. Henry M. Hall, U.S.A., ordered to temporary duty at Fort McDowell, thence to his home at Cedartown, Ga., for annulment of contract after two months leave.

Major H. M. Hallock, U.S.A., granted two months sick leave.

Lieutenant John W. Hanner, U.S.A., granted three months leave from the Philippines with permission to return to the United States by way of Europe.

Lieutenant L. M. Hathaway, U.S.A., ordered to Jeffersonville, Ind. for examination of clerks and stenographers of the Quartermaster's Department as to their fitness for Philippine service.

Dr. John R. Hereford, U.S.A., arrived at Fort Moultrie.

P. A. Surgeon W. C. Hobdy, P.H.&M.H.S., ordered from Honolulu, Hawaii, to San Francisco Quarantine Station.

Colonel John Van R. Hoff, U.S.A., relieved from duty in the office of the Chief of Staff, February 15, 1906, and ordered to Omaha, Neb., as Chief Surgeon of the Department of the Missouri.

P. A. Surgeon J. H. Holloway, U.S.N., commissioned from September 26, 1905.

P. A. Surgeon R. E. Hoyt, USN., commissioned with the rank of Lieutenant from May 8, 1905.

Assistant Surgeon H. F. Hull, U.S.N., ordered from the New York Naval Hospital to temporary duty on the *Celtic*, and thence to the Culebra Naval Station with additional duty on the *Alliance*.

Captain Paul C. Hutton, U.S.A., promoted from Lieutenant, February 11, 1906, and appointed member of a Promotion Board at Fort Bayard.

Assistant Surgeon E. L. Jones, U.S.N., appointed from December 30, 1905.

Surgeon C. P. Kalloch, P.H.&M.H.S., reassigned to the Portland (Maine) Quarantine Station, and ordered to proceed from Portland to Boston and New Bedford and return.

Lieutenant William L. Keller, U.S.A., ordered to accompany troops from Fort Logan to San Francisco and to return.

Surgeon D. B. Kerr, U.S.N., commissioned with the rank of Lieutenant Commander from April 5, 1905, and ordered from the *Boston* home to await orders.

Captain Henry S. Kiersted, U.S.A., promoted from First Lieutenant, February 4, 1906.

Dr. Charles F. Kuhn, U.S.A., assigned at Fort William H. Seward for temporary duty.

Dr. John F. Leeper, U.S.A., relieved from the Philippines and assigned to Fort Duchesne.

Surgeon J. F. Leys, U.S.N., ordered from the Bureau to the Norfolk Naval Hospital.

Lieutenant Leon T. LeWald, U.S.A., ordered to Fort Slocum, N. Y.

Dr. Stephen M. Long, U.S.A., ordered from Fort Duchesne to the Philippines.

Dr. Francis M. McCallum, U.S.A., accompanied troops from Fort D. A. Russell to Seattle, Wash., and granted two months leave.

Major Louis Provance McCormick, N.G.Pa., was married on February 1st, at Northumberland, Pa., to Miss Kathryn E. Felsing.

Surgeon F. E. McCullough, U.S.N., commissioned with the rank of Lieutenant Commander from June 9, 1903.

Assistant Surgeon W. N. McDonell, U.S.N., ordered from the Culebra Naval Station to temporary duty on the *Maine* and thence to the *Celtic*.

Assistant Surgeon F. H. McKeon, P.H.&M.H.S., ordered to temporary duty at Columbia River Quarantine.

P. A. Surgeon A. J. McLaughlin, P.H.&M.H.S., ordered from temporary duty at Berlin, Germany, to Naples, Italy.

Dr. Fred S. Macy, U.S.A., left Allegheny Arsenal for Fort Adams.

Major General Otis H. Marion, M.V.M., has been elected commander of the Old Guard of Massachusetts for 1906.

Captain Charles E. Marrow, U.S.A., ordered to accompany troops from Fort Brady to New York City and to return.

Surgeon E. H. Marsteller, U.S.N., ordered from the *Columbia* home to await orders.

A. A. Surgeon J. A. Moncure, P.H. & M.H.S., granted one month's leave.

Lieutenant Samuel J. Morris, U.S.A., ordered to Fort Schuyler, N.Y.

Captain Arthur W. Morse, U.S.A., promoted from First Lieutenant, February 4, 1906.

Captain Edward L. Munson, U.S.A., appointed member of a Promotion Board at Fort Bayard.

P. A. Surgeon J. F. Murphy, U.S.N., commissioned from May 18, 1905.

Lieutenant John A. Murtagh, U.S.A., ordered to take charge of the San Francisco Medical Supply Depot.

Dr. George W. Newlove, U.S.A., assigned to duty as surgeon of the transport *McClellan* en route to the Philippines.

Surgeon R. T. Orvis, U.S.N., commissioned with the rank of Lieutenant Commander from March 1, 1905.

Surgeon J. E. Page, U.S.N., commissioned from April 20, 1904 and ordered from the *Franklin* to the *Columbia*.

Surgeon C. Pickrell, U.S.A., ordered home from the San Juan Naval Hospital with three months sick leave.

Assistant Surgeon F. E. Porter, U.S.N., ordered from the New York Naval Hospital to the *Rhode Island*.

Lieutenant Harry F. Purnell, U.S.A., ordered to Fort Mackenzie.

Dr. Julius M. Purnell, U.S.A., ordered to Fort McDowell.

Lieutenant John J. Reilly, U.S.A., ordered to report to the Washington Promotion Board for examination, and retired for disability with rank of Captain.

Assistant Surgeon W. H. Rennie, U.S.N., ordered from the Cavite Naval Station to the *Elcano*.

Captain Charles R. Reynolds, U.S.A., promoted from Lieutenant. February 11, 1906.

Major Frederick Pratt Reynolds, U.S. A., was married at the California Club, Los Angeles, Cal., to Miss Hortense Cecilia Childs, on the evening of February 21st.

P. A. Surgeon R. R. Richardson, U.S.N., ordered from the Mare Island Naval Hospital to the *Boston*.

Surgeon General Presley Marion Rixey, U.S.N., has been recommissioned Surgeon General and Chief of the Bureau of Medicine and Surgery, Navy Department, with the rank of Rear Admiral, from February 5, 1906.

Lieutenant William Roberts, U.S.A., ordered from Fort Hamilton to temporary duty at Fort Jay.

Captain William M. Roberts, U.S.A., promoted from Lieutenant February 11, 1906.

Captain Edward P. Rockhill, U.S. A., promoted from First Lieutenant.

Surgeon G. Rothganger, U.S.N., ordered from the Norfolk Naval Hospital to the New York Naval Hospital.

A. A. Surgeon L. H. Schwerin, U.S.N., reappointed from January 28, 1906.

Lieutenant George H. Scott, U.S.A., granted one month's leave.

Major Louis Livingston Seamen, U.S. V.E., has been appointed a delegate to represent the Association of Military Surgeons at the Lisbon International Medical Congress.

Colonel Nicholas Senn, I.N.G., is registered in the Military Section of the Lisbon International Medical Congress, and will present a paper on "The Functions of the Military Surgeon on the Battlefield."

Dr. James E. Shellenberger, U.S.A., ordered from Fort Sam Houston to Fort Ringgold.

Lieutenant J. R. Shook, U.S.A., ordered to report to the Washington Promotion Board for examination.

Dr. Robert E. Sievers, U.S.A., returned to Fort Missoula from leave.

Lieutenant L. L. Smith, U. S. A., ordered to report to the Superintendent of the Army Transport Service at San Francisco.

Lieutenant Cary A. Snoddy, U. S. A., ordered to Fort Barrancas, Fla.

Major Henry D. Snyder, U. S. A., ordered to Fort Reno for inspection duty.

Medical Inspector J. M. Steele, U. S. N., commissioned with the rank of Commander from December 16, 1905.

Staff Surgeon Johann Steiner of the Austrian Service is the author of a monograph, recently issued by Safar in Vienna, on "Das Militärsanitätswesen in Schweden und Norwegen."

Surgeon Charles F. Stokes, U. S. N., relieved from duty with the Army and Navy First Aid Board, and ordered from the Naval Medical School to command the San Juan Naval Hospital.

Surgeon E. P. Stone, U. S. N., ordered from the Naval Academy to the *Rhode Island*.

Dr. Harrison W. Stuckey, U. S. A., arrived at Fort Assinniboine for temporary duty.

Lieutenant Verge E. Sweazy, U. S. A., ordered to the Washington General Hospital for observation and treatment.

Surgeon J. C. Thompson, U. S. N., commissioned with the rank of Lieutenant Commander from March 3, 1903.

Dr. Charles W. Thorp, U. S. A., granted one month's sick leave.

Dr. William H. Tukey, U. S. A., granted two months leave.

Dr. H. H. Van Kirk, U. S. A., returned to Fort Sill from accompanying troops to Fort Sam Houston.

Assistant Surgeon L. H. Wheeler, U. S. N., ordered to the Cavite Naval Station.

Dr. J. Samuel White, U. S. A., ordered from Fort Snelling, Minn., to New York City to accompany troops to the Philippines, and left on the transport *Kilpatrick*.

Lieutenant Compton Wilson, U. S. A., ordered to report to the Washington Promotion Board for examination.

Captain William H. Wilson, U. S. A., ordered from New York to Schuylkill Arsenal, Pa. and return.

Dr. Oscar W. Woods, U. S. A., died at Roanoke, Va., from tuberculosis, on February 10. Dr. Woods entered the military service at the opening of the Spanish War as a private in the 4th Virginia Infantry, was transferred to the Army Hospital Corps, later appointed Contract Surgeon in the Army, and still later made Captain and Assistant Surgeon of Volunteers, returning to the position of Contract Surgeon upon being mustered out.

THE BILL TO REORGANIZE THE MEDICAL DEPARTMENT OF THE ARMY passed the Senate on February 5th, together with the Bill to regulate the Corps of Dental Surgeons, but both were recalled the following day and again placed on the calendar at the request of Senator Hale, who stated that he desired to make objection.

Current Literature.

A MILITARY MEDICAL VOYAGE TO AMERICA.*

IT was to be expected that, with his exceptional literary tendencies, Don Juan Redondo, would produce a most readable and delightful account of his trip to America, as delegate from the Spanish government to the first International Congress of Military Surgeons, held at St. Louis, an expectation amply fulfilled by his handsome brochure, just issued from the press. With an interesting introduction, explaining the reasons for his trip and quoting the letter of invitation from the Secretary of the Association, he presents an itinerary of his voyage, beginning with Paris, passing through London and Liverpool, across the Atlantic, through New York and Cincinnati, to St. Louis and the Exposition of 1904, with trips to Chicago and Niagara, devoting an interesting chapter to the International Congress of Military Surgeons, and taking up a discussion of the Naval Medical School, of various American hospitals, and returning to Spain by way of New York, Naples, Pompeii and Rome,—the whole beautifully illustrated with many attractive half tones.

THE SANITARY SERGEANT.†

IN a compact book of 223 pages, Staff Surgeon Friedheim gives an interesting account of the organization of the German sanitary service, including both the military and naval forces, illustrating his work with a series of portraits of the senior medi-

**Recuerdos de un Viaje á América.* Por Don JUAN REDONDO. 12mo: pp. 233, with numerous half tones. Madrid, Revista General de Marine, 1905.

†*Der Sanitätsunteroffizier*, von Dr. H. FRIEDHEIM, Oberstabs- und Regimentsarzt des Husaren-Regiments Königin Wilhelmina der Niederlande (Hannoversches) Nr. 15 Mit 34 Bildnissen. Hamburg, Verlag von Geb-
rüder Lüdeking, 1905.

cal officers of the various services of the German imperial and provincial armies. The work opens with a historical sketch, discusses the military obligations and the organization of the German army and navy, including the sanitary soldier on sea and land, and devotes a chapter to the organization of the imperial forces in Africa and Asia. He then takes up specifically in the fifth chapter the organization of the sanitary service in peace and war, and follows with a discussion of the instruction and drills given the men, and numerous other interesting and detailed features, closing with a glossary and an excellent index.

A POPULAR WORK ON DIETETICS FOR NURSES.*

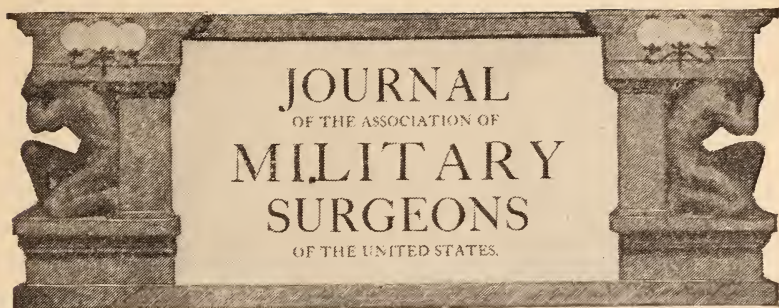
THE importance of a knowledge of practical dietetics in the work of a nurse can hardly be too highly estimated. The larger and technical works upon the subject are liable to confuse the practical nurse and a brief simply worded book is eminently adapted to the purpose. Miss Pattee, who has made a special study of the subject, has succeeded in producing a little volume, inexpensive, simple, succinct, intelligible and well adapted to its purpose.

THE JAPANESE NAVAL MEDICAL SERVICES.†

THE most complete account of the medical service of the Japanese Navy, yet to appear, has been published in the report of Surgeon Braisted, recently issued from the Government Printing Office. The text is exceptionally full and unusually exhaustive and the illustrations are of a highly illustrative character and add much to the value of the text. Free quotations from this valuable report will be made from time to time in the JOURNAL.

**Practical Dietetics, with Reference to Diet in Disease.* By ALIDA FRANCES PATTEE. Third Edition; 12mo.; pp. 312. New York, A. F. Pattee, 1906.

†*Report on the Japanese Naval Medical and Sanitary Features of the Russo-Japanese War to the Surgeon General U.S. Navy.* By Surgeon WILLIAM C. BRAISTED, U.S.N. 8vo; pp. 82, with numerous half tones and zinc etchings. Washington, Government Printing Office, 1906.



Original Memoirs.

AUTHORS ALONE ARE RESPONSIBLE FOR THE OPINIONS
EXPRESSED IN THEIR CONTRIBUTIONS.

THE INITIAL EXAMINATION OF THE RECRUIT FOR THE UNITED STATES ARMY.

By HUGH HAMILTON M.D.,

EXAMINING SURGEON AT THE GENERAL RECRUITING OFFICE
UNITED STATES ARMY IN HARRISBURG, PENNSYLVANIA.



THE importance of the initial examination of the recruit, the effective unit of an army, is axomatic; and its importance so impressed me in years of personal experience, while making such inspections, that a simple tactical method and subsequent pictorial illustration, to quickly find the

real physical fitness of applicants for enlistment, has gradually grown into use at the United States Army General Recruiting Station at Harrisburg, Pennsylvania (now under the charge of Major Samuel T. Hamilton, U.S.A., retired): to get the best quality of men, to reduce rejections at depots and posts, and to

aid in one's share at the task of raising the standard of efficiency of the United States Army above any in the world.

In all contentions, and war is a struggle, the base upon which success depends is founded upon an idealization and realization of the best ability and maximum efficiency, but careless direction breeds indifferent execution and failure results.

That the quality of a whole is made up of its units is indisputable, and the possible coalescence and moulding of the individual faculties into a concrete purposeful mass is the secret of achievement. These philosophical ideals are prominent in forces for defence, if it is to be effective; and much more so in offensive advances. True information is the basis of sure conclusions.

The recent performances of the Japanese elicited first our wonder, then our admiration for their preparedness, and their medical statistics were:

PERCENTAGES.

PER CENT.	NUMBER.
100	1,200,000 men.
5.83	70,000 men killed.
25.83	310,000 men sick and wounded.
1.25	15,000 men sick, died.
0.82	9,800 men wounded, died.

The Minister of War (JOURNAL OF MILITARY SURGEONS, January, 1905) speaking at a banquet said that Japan at one time during the war had 1,200,000 troops under arms. Of this number 70,000 died, 310,000 were wounded or sick, but only 15,000 died of sickness and 9,800 of wounds after coming under treatment.

The fundamental aim of this nation was carefully selected men, then competent care of them.

The pivotal point in "preparedness" is as the Scriptures has said long ago, "truth in the inward parts." The "inward parts" of an army is the single soldier—because he is on picket—an uncertain quantity there, may throw the a, b, c, side of the question into disastrous confusion.


Where is this individual element of fitness to be first submitted to judgment? When the man applies for enlistment in our system of voluntary accretions to the militant body.

As the "private" soldier is the real force which performs the work under the trained intellect of the executive officers, it becomes essential that he be then scrutinized with carefulness.

To do this properly, in the first instance, the initial examination is sometimes a serious and not an easy problem. One has to take the system pursued by the Army of the United States into consideration.

A commissioned recruiting officer is ordered to a prominent town, establishes a "general" station, attached to which are a variable and changeable number of sub-stations; these sub-stations are in charge of more or less competent corporals or sergeants; the officer is responsible for all actions. The examining surgeon at many sub-stations is a village doctor who has seldom seen *many* naked men since he was "a boy in swimming;" to observe naked men critically demands studious reading of General Greenleaf's "Tripler" and a retentive memory to readily make use of the information. When there are many men to examine, there is lack of time and of suitable fixtures, often both; then to determine the factors upon which to reach true judgment respecting the physical qualities of a man, adds to the difficulties. When that doctor is not of a conscientious kind, he can, and does give the recruiting officer endless annoyance, and at times personal expense; the charges under such circumstances to the government in the aggregate may amount to considerable sums. To overcome these objections, and at the same time to bring gross indicative blemishes prominently to one's notice, the adoption of a plan suggested from my experience and practice continuously since 1883 as an examining surgeon here, at the U.S. Army General Recruiting Station, may go toward eliminating obtuse or inexperienced observation,—mistakes.

The examining surgeon after reading over the answers signed by the recruit in his application for enlistment, should strictly note his answers. Look him over with his hat off, so as to see the shape of his head and facial expression. Take the color of eyes and hair, then his vision and teeth. The teeth now designated upon the figure card (Fig. 6) are of much moment, because the American-born of the second or more generations are quite

EXAMINING SURGEON.			
Place,.....	Date,.....	19	
Name,.....	Age,.....		
Service			
Color Test: R,.....	L,.....		
Color of Eyes,.....	Hair,.....		
Vision, R,.....	L,.....	Hearing,....	R,..... L,.....
Not Visible, 8 8 Not Visible			
Mark Teeth Absent "X" Decaying "O"	Upper Jaw Right 1		Left 1 Lower Jaw
	Not Visible, 8 8 Not Visible		
Right.		Left.	
Missing	Upper: 8 7 6 5 4 3 2 1	1 2 3 4 5 6 7 8	
Teeth	Lower: 8 7 6 5 4 3 2 1	1 2 3 4 5 6 7 8	
Weight,.....	Pounds.	Height	Inches
Expiration,.....	Inches	Inspiration,.....	Inches
Mobility,.....	Inches		
DEFECTS.			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
Disposal,			
Vaccinated; re-examined before leaving this station and found to be as stated.			
Harrisburg, Pa.,			
19		EXAMINING SURGEON.	

deficient in teeth, from the small size of the jaws which crowd the number of teeth in the mouth; the custom of eating sweetmeats in childhood not giving enough mineral matter to produce strong enamel to the permanent teeth, giving rise to early decay with a neglect founded upon false economy and the dread of pain are some of the causes. The effects are, for a soldier, want of proper nourishment intestinal disorders,

Fig. 1. Yellow Slip.

consequent inefficiency, subsequently the hospital and his campaign ends in a coffin.

The difference between a laboring man and a more gently raised person is recognizable by the teeth; one, as a rule, has the molars well ground by chewing rude food, the latter has losses of them or they are decayed or capped. In early life all the molars are pointed because flesh foods are needed for the energy of early manhood just as the vegetable diet is desired in adult existence. Nearly every re-enlistment of the private soldier has had good teeth, those who survived tropical service had almost

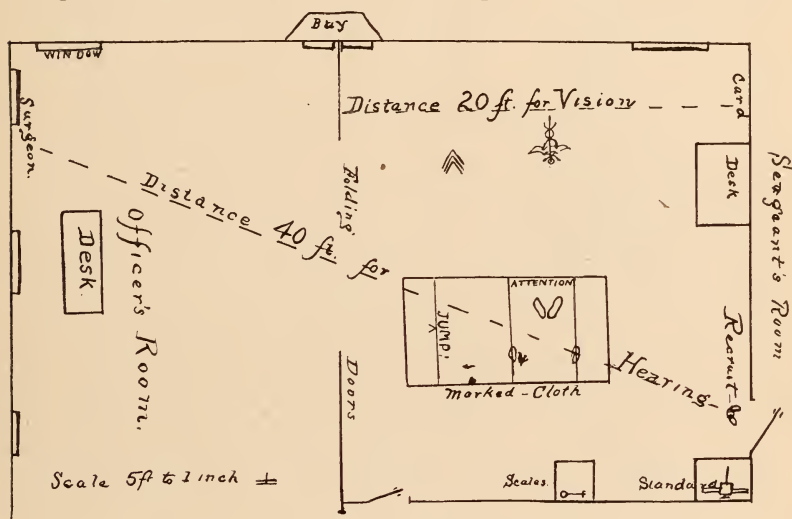


Fig. 2. Plan of Examining Room at Harrisburg, Pa., U.S.A. Rc'tg St'n.

with few exceptions an excellent set of teeth (Fig. 1).

These tests should be made in an apartment (Fig. 2) in the presence of the doctor and at least a sergeant: to avoid distraction of the man his vision and hearing should *not* be taken when naked under the unusual conditions; otherwise failure to see and hear as accurately as desired, might cause rejection of a capable man.

He should then remove all his clothing and stand at a given point where his whole body can be seen in a good light. This

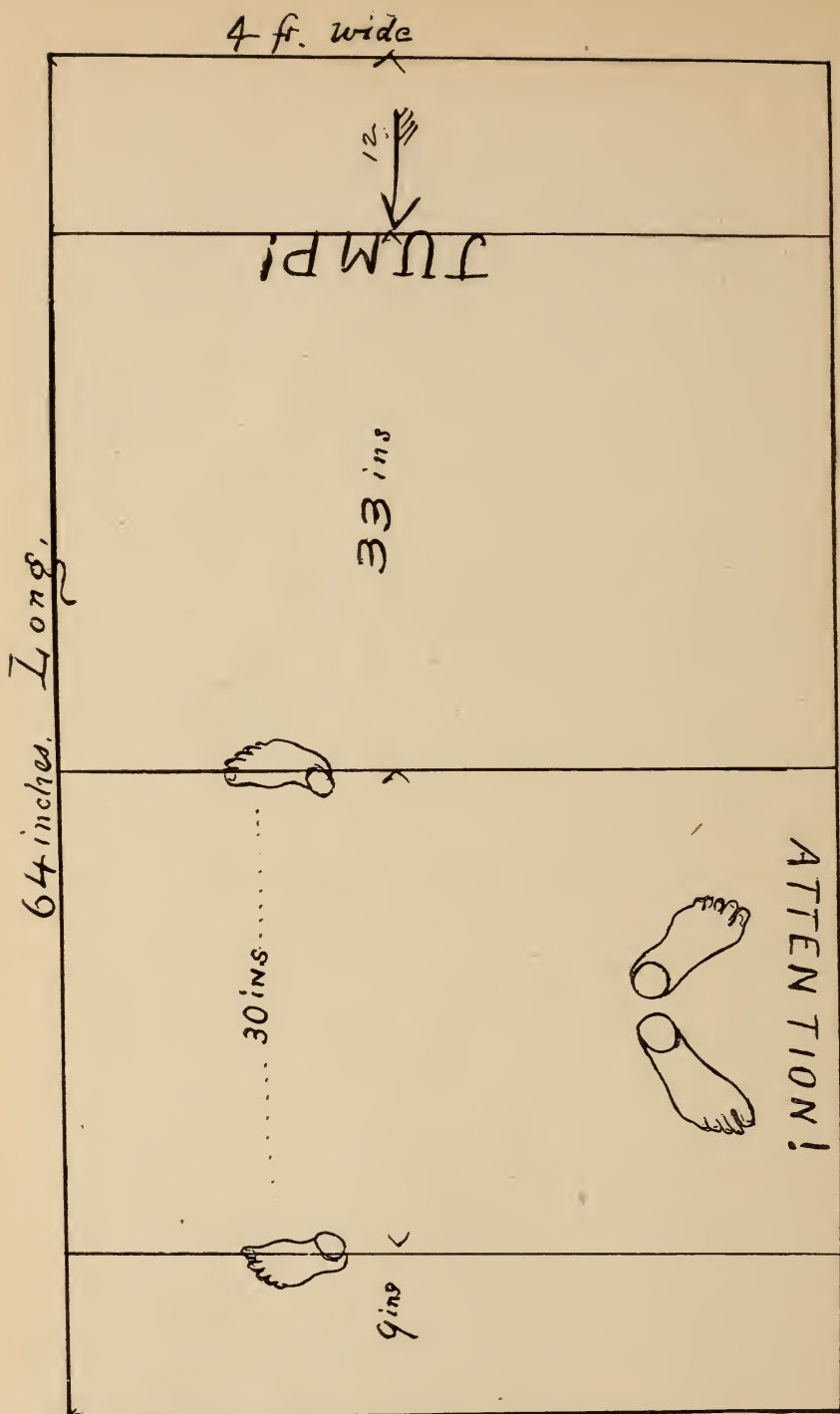


Fig. 3. Plan of Cloth—Scale, one inch to the foot.

has been greatly facilitated in making a diagram upon canvas, oil-cloth or on a floor with chalk or black paint, as the case may be, of his shape and size (Fig. 3).

A proper graduated pole for true height is made of wood, as shown in Fig. 4.

The use of a door frame, tent pole or even the measuring rod of the several scales furnished by the Q. M. Dept. leads to irregular measurements. These graduated rods of weighing scales are of metal and bend very easily and none of them are graduated for barefooted men and the size of the heels of shoes vary. Relation of height to weight is obvious because a short man might not be able to keep up in marches and a long man would be exhausted by impedimenta. No man in disproportion can likely excell as one can in regular proportion of physical qualities. One enlistment frequently improves an unattractive recruit; but the foundation for symmetrical appearance is perfect anatomy; it is not uncommon for lads who work upon farms to be found emaciated from monotonous diet and the lack of assimilatable food: one would suppose the opposite. These boys, however, after an enlistment sometimes approach Adonises.

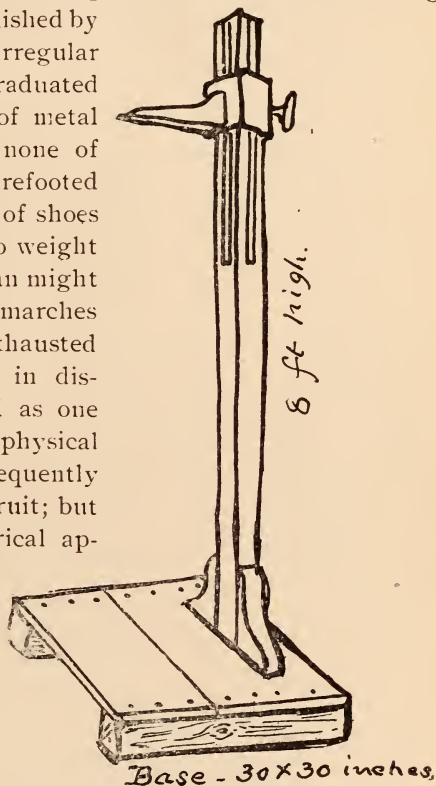


Fig. 4. Standard for measuring height.

The practice pursued by me from the gradual growth of years experience, is as follows:

The applicant is carefully scrutinized after having been questioned and signing his application, then made to read the letters of the vision test at proper distances. Then placed at

about forty feet with a sergeant or orderly having his middle finger placed upon the occipital protuberances and the thumb upon the tragus of the ear the words of one or two syllables commencing with I, D, or S. are spoken in moderate voice by the examining surgeon as a test for hearing, (1) "Susie's Silk Stockings"; (2) "Seven bottles of beer;" (3) "Isaac Inches on Indians;" (4) "David's Dirty Duds," the applicant repeating them so as to be heard distinctly by the surgeon forty feet away (Fig. 3 and 4).

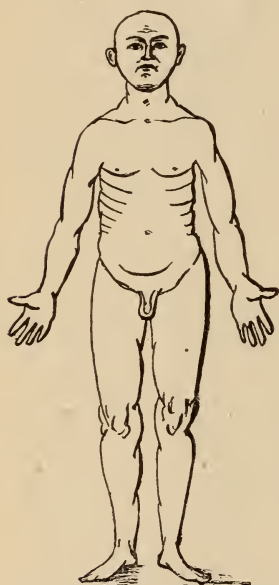


Fig. 5. View of the Naked Recruit.

The teeth are examined and those missing and badly decayed noted (see yellow slip, Fig. 1); then his throat and nose inspected. The man is then stripped completely naked, brought under the standard (Fig. 2), for height, where he is directed to stand naturally with his heels against an upright board as a guide to a line with his buttock, shoulders and head with the chin very slightly raised; from there he steps upon the scales (Fairbanks No. 14½) when his weight is taken. This should be about two to two and one-half pounds per inch, advancing in proportion to his increase in height. The matter will be more clearly expressed when divided analytically in these heads:

1. Visual Observations: embraced in merely looking at the naked man.

II. Manual Observations: in which the surgeon secures objective evidence by touch and any other physical methods.

III. Exercises: exhibit the control of the muscular functions of the body.

A. Of the lower extremity, below the umbilicus.

B. Of the upper extremity, above the umbilicus.

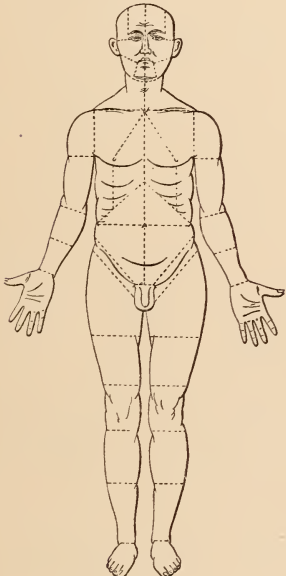
C. Of the defects in the internal viscera.

IV. The object of each exercise.

VISUAL OBSERVATIONS.

After the recruit has been tested for vision, hearing and teeth, then stripped naked placed under the "Standard" (Fig. 4) and stands in a good light, upon the foot marks under the

Name	Age.....	Height.....	Eyes.....
Organization	Hair.....	White or Colored.....	
	Place of enlistment.....		
	Date of enlistment.....		
	Date of last prior enlistment in Regular Army,		
		
	Missing } Upper, 8 7 6 5 4 3 2 1	1 2 3 4 5 6 7 8	
	Teeth, } Lower, 8 7 6 5 4 3 2 1	1 2 3 4 3 6 7 8	



Station
 Date, Surgeon U. S. Army.

Fig. 6. Figure-card(front).—Manual, Med. Dept. U. S. Army (1902) p. 116.

word "Attention" on the oil-cloth (Fig. 3) a general survey of the boy is made (Fig. 5) looked over in front (Fig. 6) and in the rear (Fig. 7). The skin is looked at for parasites, eruptions and scars, then he is particularly scrutinized from the ground up-

ward, to see whether he has defective toes (Figs. 27 and 28) flat-foot (Fig. 29a) ankles or "splay-feet" (Fig. 29b) the knees for "knock-kneedness" (Fig. 16) or bowed-legs (Fig. 17). Now for varicocele (Fig. 21) hernia (Fig. 20), for deformed pelvic bones

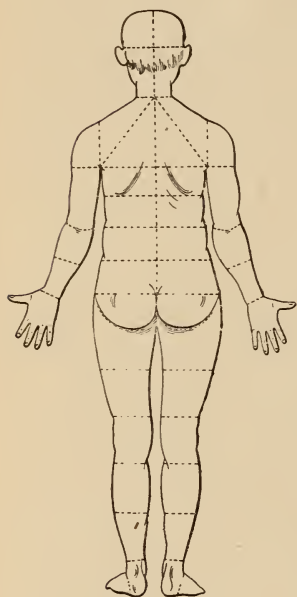


Fig. 7. Figure-card (rear).—Manual, Med: Dept: U.S. Army (1902) p. 117.

(Figs. 14 and 15), then the breast-bone, collar-bone, shoulders, arms, fore-arms, hands and missing fingers (Fig. 30) jaws, mouth, nose, nostrils and ears. Walk behind the man (Figs. 11 and 12)

observe varicose veins in upper and lower extremities, the spine and position of the arms while they are still extended.

MANUAL OBSERVATIONS.

“Lock-thumbs,” (Exercise No. 1. Fig. 8).

Being already in position of locked-thumbs his chest measure is taken as follows: The tape line is passed around the chest on a line with the nipples in front, and with lowest point of the shoulder blade. The tape is retained more surely in position by resting on the index fingers of an orderly. The measure is taken at expiration and then at expansion, the difference is the mobility of the intercostal and abdominal muscles. (Ex. 2.—Fig. 8).

For determining the mental and physical balance:—co-ordination (Ex. 3.—Fig. 9). To make hernia or venereal diseases more apparent (Ex. 4.—Fig. 10.) To discover the curvature of the back-bone, hemorrhoids and varicocele (Ex. 5.—Figs. 11, 12 & 13).

EXERCISES.

UNDER VISUAL OBSERVATION:—

Exercise No. 1.

Command: “Attention.”

(Heels together, toes outward, hands naturally by the side. Listen carefully what you are told to do).

FOR MANUAL OBSERVATION:—

Exercise No. 1.

Command: “Attention.”

“Lock-thumbs”—locking the thumbs is done by putting the arms directly in front of the body, turning the palms of the hands downwards, placing the right thumb between the left thumb and forefinger on the palm of the left hand, straighten the elbows and raise the hands and arms high above the head. (Fig. 8).

Exercise No. 2.

Command: “Attention.”

“Lock-thumbs.”

To measure the chest:—Place the initial end of the tape-line in



Fig. 8. Position for placing Tape line in Chest measuring.

the left hand, the nail of the forefinger of that hand resting in the depression at the lower part of the breast-bone ("Glad-iolus") on a level with the nipples, pass the other end of the tape-line around the chest, from right to left of the man, on a line level with the lowest angles of the shoulder-blades, to the other end of the tape-line passing immediately under the left nipple, so that the tape-line held taut in one's right hand may easily slip by the beginning of the tape-line as an indicator.

"Drop the arms naturally to the side."

"Say *LOW* without taking breath."

(When the word "*Low*" becomes inaudible, note inches as Expiration).

"Fill Up."

(Note the highest number of inches shown by tape-line as it slips from the right to the left side of the man as Inspiration).

Observe The difference between Inspiration and Expiration is the Mobility (See Fig. 1).

Exercise No. 3.

Command: "Attention."

"Lock thumbs."

"Heels and toes together."

"Shut your eyes."

"Stand there" (about 20 seconds.)

Observe The amount of winking or wavering of the body indicates the degree of mental and physical composure. A test for co-ordination (Fig. 9).

Exercise No. 4.

Command: "Attention."

"Lock thumbs."

"Rise on the toes of both feet."

"Stand there."

(The surgeon puts the third finger of his right hand on the navel, when standing to the right of the man, keeping it there.)

"Cough."

(The surgeon pushes the little finger in the inguinal canal on each side separately).

"Cough."

"Attention."

(The surgeon feels for swollen glands in the groins separately, and also for varicocele).

"Strip your penis forward."



Fig. 9. Attitude to test Co-ordination.

"Strip your penis backward."

"Turn it all around."

"Open the little hole with both your thumbs."

(The surgeon steps behind the man directs him to assume the position in Fig. 36, feels for swollen glands in the neck and on inside of each elbow simultaneously).

Observe: This test will discover loose inguinal rings, any hernia and acute and secondary venereal infections, also congenital or acquired genito-urinary malformations and defects. (Fig. 10).



Fig. 10. Locked thumbs and Rise upon the Toes.

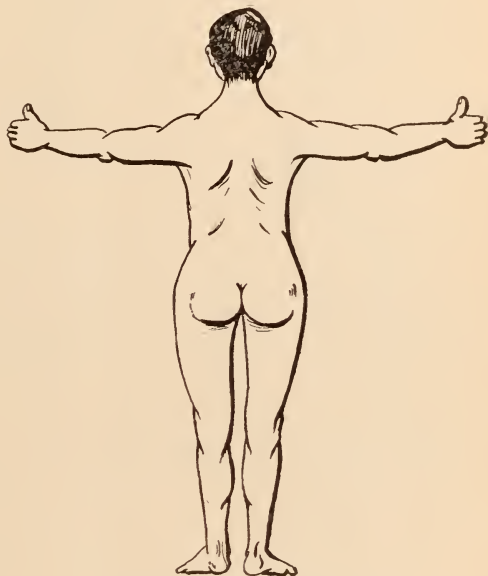


Fig. 11. Position to test the Lateral Curvature of the Spine.

Exercise No. 5.

Command: "Attention."

"Turn around with your back to me."

"Extend arms horizontally."

"Thumbs up."

"Stand straight." (Fig. 11).

Observe: The degree horizontally. (Fig. 12).

(The surgeon feels the back-bone downwards).

"Drop the arms."

"Move forward to the marks on the oil-cloth, put your feet there." (Fig. 3).

"Spread the legs apart."

"Open the buttocks with your hands."

"Lean forward far down." (Fig. 13).

(The surgeon feels along the back-bone in both directions, and

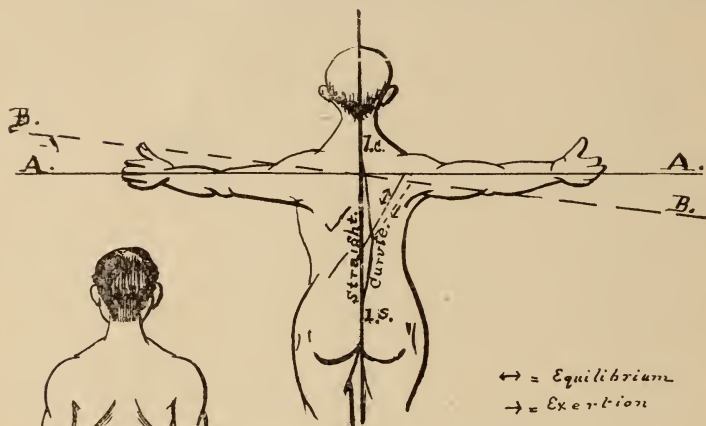


Fig. 12. Showing the Mechanical conditions in Spinal Curvature.



Fig. 14. Rear-view to discover narrow Pelvis.



Fig. 13. Position to Expose Hemorrhoids.

if necessary measures the degree of spinal curvature, from the seventh cervical to the end of the sacrum."

Observe: Varicocele, hemorrhoids; use a small probe to find fistula, (a little peroxide of hydrogen upon a bit of cotton on the end of the probe easily gets an external fistula if present.

EXERCISES OF THE LOWER EXTREMITIES.

UNDER MANUAL OBSERVATIONS:—

Exercises No. 1.

Command: "Attention."

"Heels and toes together." (Figs. 16 & 17).

Observe: Knock-knees or bowed legs.

Exercise No. 2.

Command: "Attention."

"Lock-thumbs."

"Kneel front with both knees at once, keep body erect."

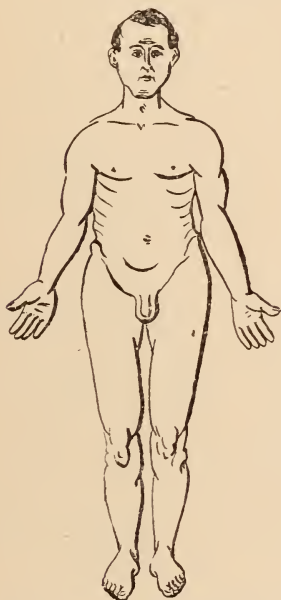


Fig. 15. Front view showing narrow pelvis.

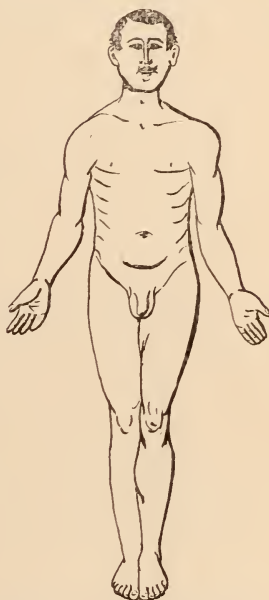


Fig. 16. Revealing knocked-kneedness.

"Rise with both knees at once, keep body erect." (Fig. 18).

Observe: Whether each knee performs its part simultaneously.

Exercise No. 3.

Command: "Attention."

"Extend right hand and arm straight upward."

"Lift the left foot off the floor."

"Raise the body upon the toes of the right foot." (Fig. 19).

"Do the same with the left foot."

Observe: Hammer-toes, flat-foot or splay-foot, defects of the feet and ankles.

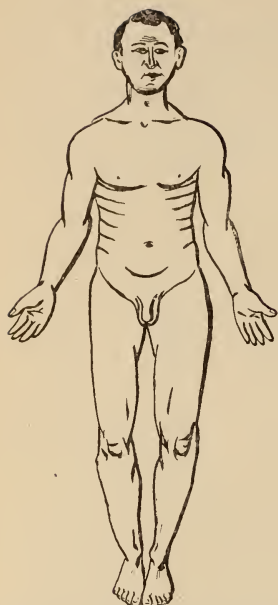


Fig. 17. Showing the bowed leg.



Fig. 19. Raising the body on toes of either foot.



Fig. 18. Kneeling position, showing any defect in hip-joints.

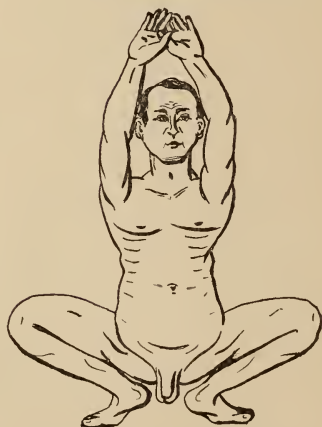


Fig. 20. Squatting on the toes.



Fig. 21. Kneeling on one knee for varicocele.

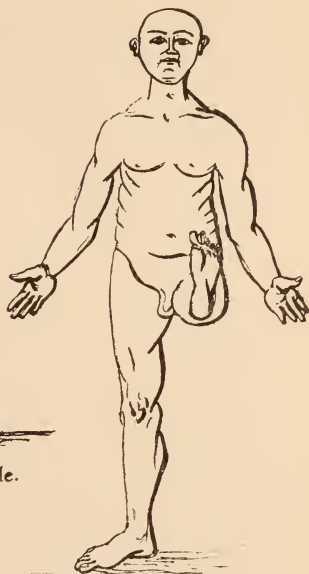


Fig. 22. High kick, front.

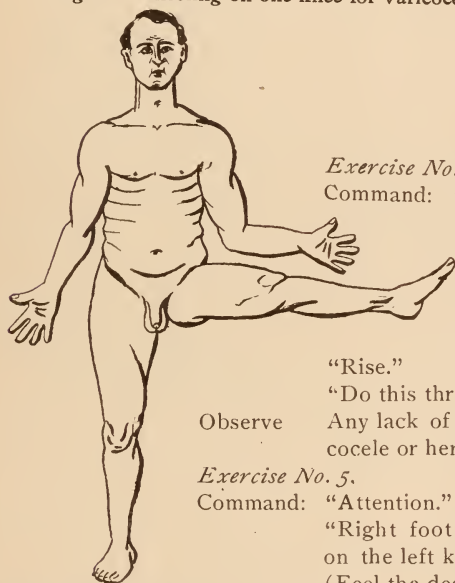


Fig. 23. Kick sideways.

Exercise No. 4.

Command: "Attention."

"Lock-thumbs."

"Rise on the toes."

"Keep the body straight up."

"Squat low down, put the knees far out (about 40°)"

"Rise."

"Do this three times." (Fig. 20).

Observe Any lack of inequality of movement, varicocele or hernias.

Exercise No. 5.

Command: "Attention."

"Right foot forward bend the knee, kneel on the left knee, keep body erect." (Fig. 21).
 (Feel the degree of varicocele).

Exercise No. 6.

Command: "Attention."

"Kick right foot in front as high as you can." (Fig. 22).

Exercise No. 7.

Command: "Attention."

"Kick left foot in front as high as you can." (Fig. 22).

Exercise No. 8.

Command: "Attention."

"Kick right foot side-ways." (Fig. 23).

Exercise No. 9.

Command: "Attention."

"Kick right foot backward" (like a mule) (Fig. 24).



Fig. 24. Kick backward (like a mule)



Fig. 25. Kick heel to buttock.

Exercise No. 10.

Command: "Attention."

"Kick left foot sideways." (Fig. 23).

Exercise No. 11.

Command: "Attention."

"Kick left foot backwards." (Fig. 24).

Exercise No. 12.

Command: "Attention."

"Kick your buttock with your right heel." (Fig. 25).

(Move the foot first well in front).

Exercise No. 13.

Command: "Attention."

"Kick your buttock with the left heel." (Fig. 25).

Exercise No. 14.

Command: "Attention."

"Jump up striking both of your heels to the buttock."

Exercise No. 15.

Command: "Attention."

"Kick right knee to nipple." (Fig. 26).

Exercise No. 16.

Command: "Attention."

"Kick left knee to nipple." (Fig. 26).

Exercise No. 17.

Command: "Attention."

"Right foot forward in front."

"Spread all the toes apart."

"Draw the foot to 'attention' pressing the toes close to the floor. (Figs 27 & 28).

Observe webbed and hammer-toes, also callosities and nails.

Exercise No. 18.

Command: "Attention."

"Left foot forward in front."

"Spread all the toes apart."

"Draw the foot to 'attention' pressing the toes close to the floor." (Figs. 27 & 28).

Observe for riding toes and hammer-toes.

Exercise No. 19.

Command: "Attention."

"Turn left side toward me."

"Put left foot front."

"Bear the weight of the body on the right foot."

"Stand there." (Fig. 29a)

Observe Flat-foot.

Exercise No. 20.

Command: "Attention."

"Turn right side toward me."

"Put right foot front."

"Bear the weight of the body on the left foot."

"Stand there." Fig. 29a).

Exercise No. 21.

Command: "Attention."

"Stand with the feet about five inches apart." (Fig. 29b).

Observe Splay-foot.



Fig. 26. Kick knee to nipple.



Fig. 27. Spread toes of one foot, draw on the floor to the heel of the other foot.



Fig. 28. Showing "Hammer toe."

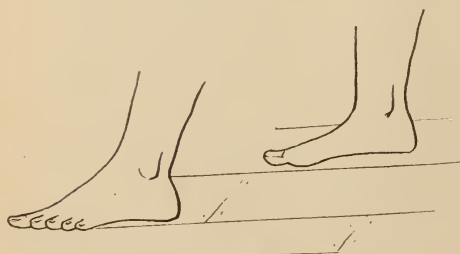


Fig. 29 a. To detect "Flat-foot."



Fig. 29 b. Splay-foot.

EXERCISES FOR THE UPPER EXTREMITIES.

UNDER MANUAL OBSERVATIONS:—

Exercise No. 1.

Command: "Attention."

"Extend arms horizontally."

"Fingers closed on the palms."

"Thumbs up." (Fig. 30).

"Flex the arms, put thumbs on the shoulders." (Fig. 31).

"Elbows to the front, touching." (Fig. 32).

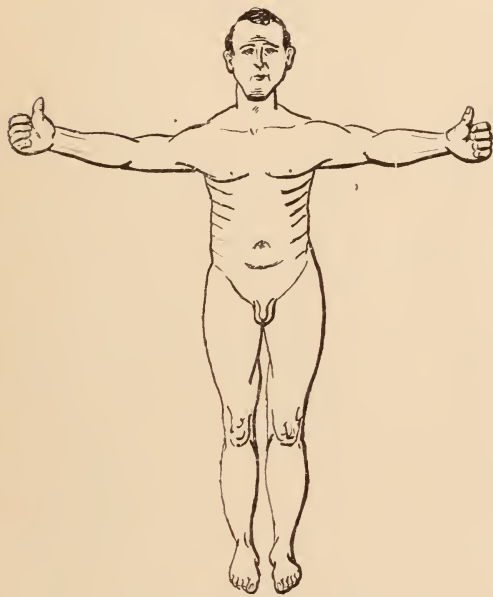


Fig. 30. Arms extended, thumbs up, fingers in the palms.

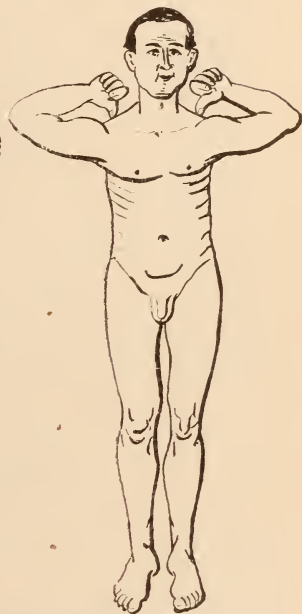


Fig. 31. Thumbs on Shoulders.

"Extend arms directly in front, palms of the hands together." (Fig. 33).

"Turn the backs of the hands together." (Fig. 34).

"Put the palms together again, throw the arms as far back as possible, rising on the toes at the same time." (Fig. 35).

Exercise No. 2.

Command: "Attention."

"Elbows to the side."

"Fore-arms straight in front."

"Extend hands thumbs up." (Fig. 36).



Fig. 32. Elbows front.

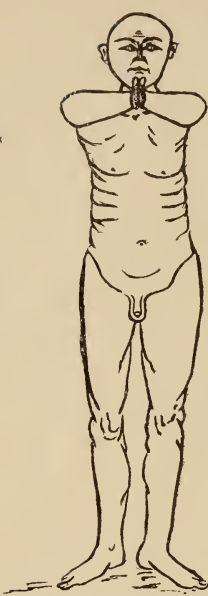


Fig. 33. Arms directly in front, palms together.



Fig. 34. Arms directly in front, hands directly in front, palms together.



Fig. 36. Elbows to the sides, hands directly in front, palms facing each other.

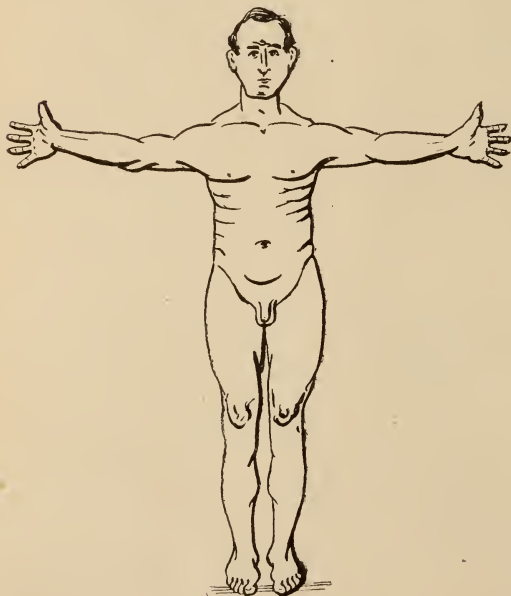


Fig. 35. Arms directly in front, palms together, throw the arm as far back as possible, at the same time rising on the toes.

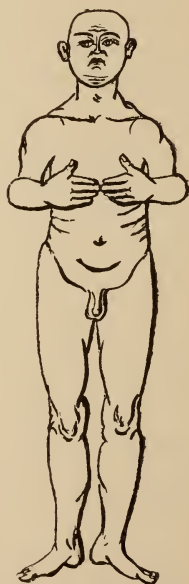


Fig. 37. Middle fingers touching, in front of the breast.

(The surgeon should pass to the rear: examine for enlarged glands at the neck and on the inner surfaces of the elbows also for varicose veins of the legs).

N. B. To Exercise 9 the last position of Exercise No. 2 is maintained.

Exercise No. 3.

Command: "Move the hands inward from the wrists touching the middle fingers to each other." (Fig. 37).

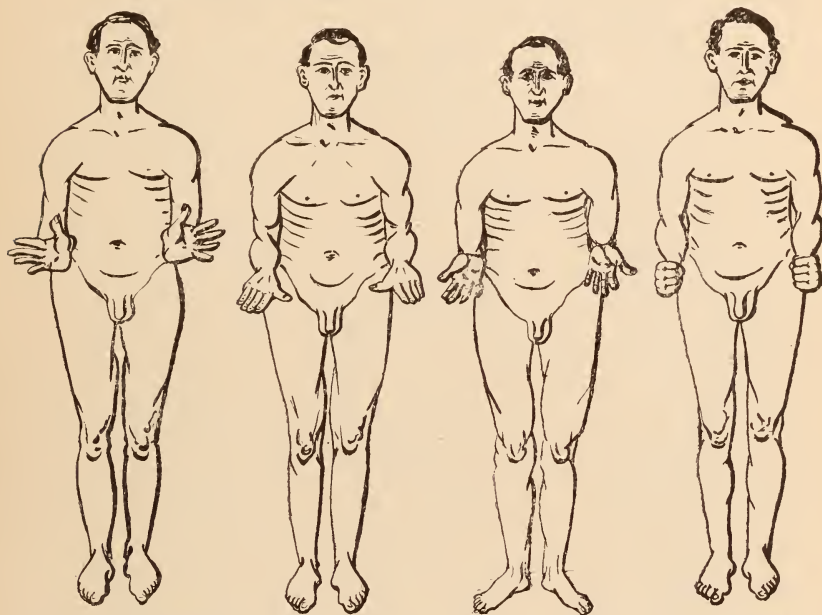


Fig. 38. Palms extended outward, from the wrist.

Fig. 39. Palms down

Fig. 40. Palms up.

Fig. 41. Make a fist.

Exercise No. 4.

"Extend the palms upward from the wrists. (Fig. 38.

Exercise No. 5.

Command: "Extend hands in front, palms down." (Fig. 39).

Exercise No. 6.

Command: "Palms up." (Fig. 40).

Exercise No 7.

Command: "Make a fist with the thumbs outside the hand." (Fig. 41).

Rotate fists about the wrists." (Figs. 42 & 43).

Exercise No. 8.

Command: "Make fists with the thumbs inside."

"Rotate fists about wrists." Fig. 44.

Exercise No. 9.

Command: "Attention."

"Extend arms directly in front."

"Spread the fingers, palm up." (Fig. 45).

(The surgeon should try the thumbs and fingers separately for extension and flexion).

"Turn the palms down." (Fig. 46).



Figs. 42 and 43. Move fist about wrist.

Fig. 44. Make fists with the thumbs inside the fingers:— move the fist about wrist.



Fig. 45. Put arms directly in front, palms down.

Exercise No. 10.

Command: "Attention."

"Extend right arm, front, make a fist. thumbs outside, fingers up."

"Rotate fist about wrist." (Fig. 47).

Exercise No. 11.

Command: "Attention."

"Extend left arm, front, make fist, thumb outside, fingers up."

"Rotate fist about wrist." (Fig. 47).

Exercise No. 12.

Command: "Attention."

"Extend right arm front."

"Rotate right arm around the shoulder, dropping it downward for about thirty seconds." (Fig. 48).

Exercise No. 13.

Command: "Attention."

"Extend left arm front."

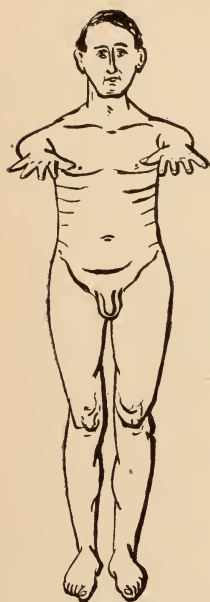


Fig. 46. Extend arms directly in front, palms down.



Fig. 47. Extend one arm, make a fist, rotate first about wrist.

"Rotate the arm around the shoulder dropping it downward for thirty seconds." (Fig. 48).

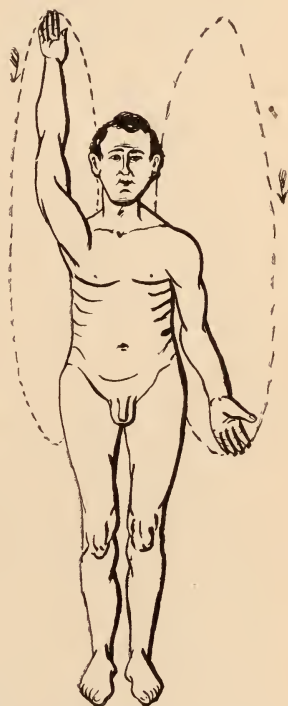


Fig. 48-49. Extend one arm, palm open, rotate around shoulder, extend both arms "windmill."

Exercise No. 14.

Command: "Attention."

"Put the right hand on the left shoulder."

"Raise the right elbow horizontally."

"Extend the right arm in a circle over the head, to the left shoulder." (Fig. 50).

Exercise No. 15.

Command: "Put the left hand on the right shoulder."

"Raise the left elbow horizontally."

"Extend the left arm in a circle over the head to the right shoulder." (Fig. 50).

Exercise No. 16.

Command: "Attention."

"Raise right arm straight up."

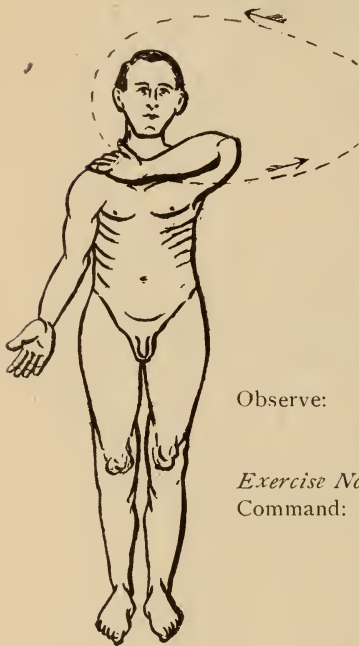


Fig. 50. Place one hand on the opposite shoulder, rotate about head.

"Put the left arm directly in front."

"Rotate both arms forward around the shoulders." (Windmill). (Fig. 49).

Exercise No. 17.

Command: "Attention."

"Run on toes around the room."

"Run on toes around the room."

"Keep on." (For 2½ minutes).

"Hop on the toes of the right foot."

"Keep on." (For 2½ minutes).

"Hop on the toes of the left foot."

Observe: Splay-foot or flat-foot.

"Toe the line." (Fig. 3).

"Standing jump." (Fig. 3).

Exercise No. 18.

Command: "Stand on 'attention' on the foot marks." (Fig. 3).

(The ought to use a 'Lannec' stethoscope over the four valves of the heart and also over the left carotid artery in the neck). (See Figs. Nos. 54, 55, 56, 57, 58).

N. B. The sounds in a double stethoscope are too accentuated, while the sounds through a phonendoscope are still more misleading, from unusual murmurs

(The Thoracic and Abdominal viscera and organs are percussed and auscultated). (See Figs. 51, 52, 53).

The purpose of the several adjuncts and exercises made use of is to expedite the matter in hand, and also, as near as possible, to eliminate the personal equation of an examining surgeon, who either from ignorance or otherwise, could not help having pal-

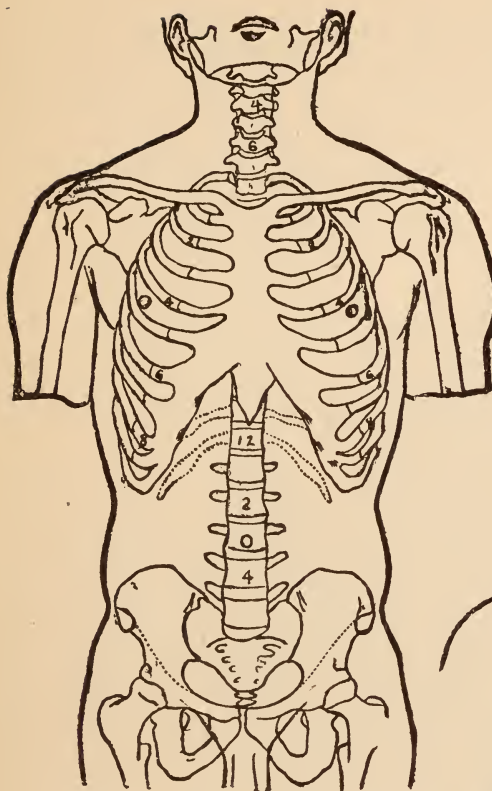


Fig. 51. Diagram showing bony (front) structure of the trunk.

superior officers for decision, when necessary. The number of defects noted on "yellow slip," ten in number, add ease in deciding as to acceptability of the man.

The lettered and marked oil-cloth or canvas places the subjects for examination in a uniform place and postures. In

pable defects brought prominently before his eyes, by this order of inspection.

The "Yellow Slip" makes a record at the time and is on the Surgeon's desk and from which the report of the "Physical Examination blank" is made. It also makes a data that can be referred to in any event requiring it. In re-enlistments, at the Harrisburg, Pa., office, it was useful, and a copy in reporting defects to the

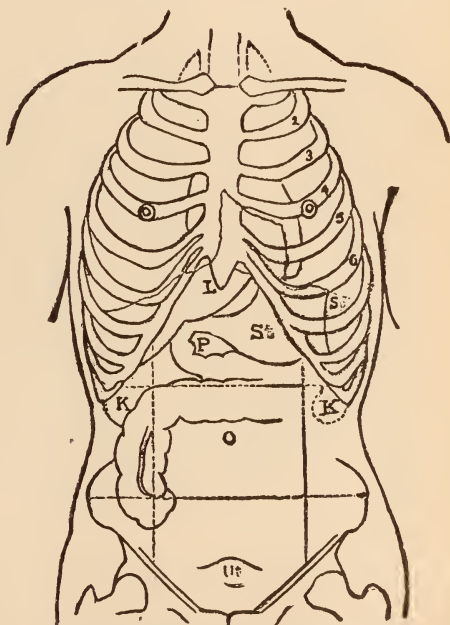


Fig. 52. Diagram showing bony (rear) structure of trunk.

experience I have found it well when there are many men to be looked over, that one or two other naked fellows, soon to go through the exercises, observing the others, see how it is done; grasp the design, and save time.

The arrangement of an examining room will be governed by environments.

The heavy wooden standard is accurate, and that is essential because upon the true height depends

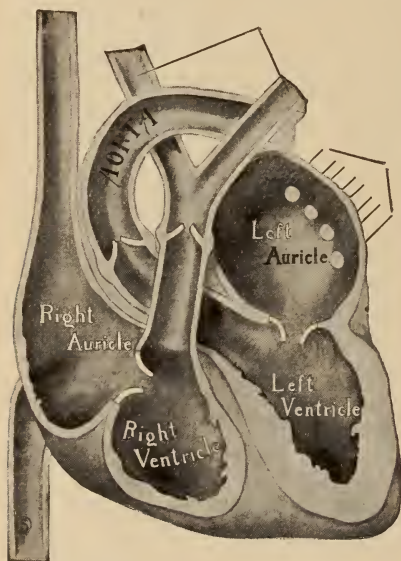


Fig. 54. Diagram showing relation of the chambers, valves and vessels of the heart.*

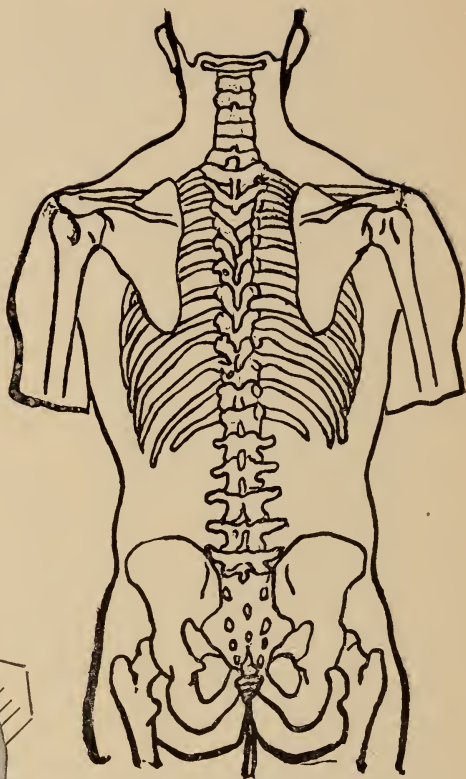


Fig. 53. Diagram showing bony (rear) structure of trunk.

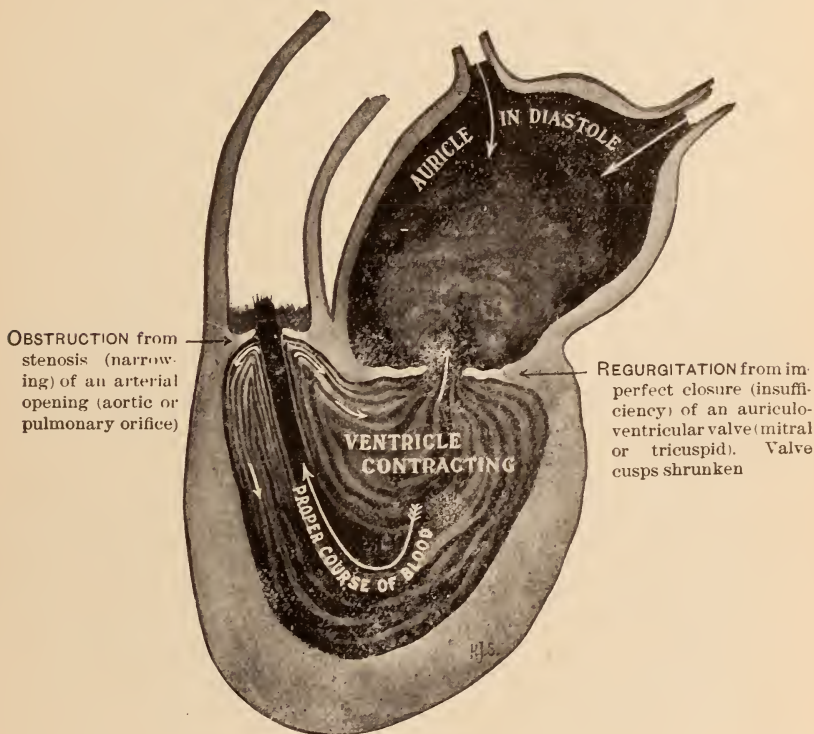
proportionate weight and chest measurement.

In measuring the mobility, it has been found in my practice to give the least variable results to have an orderly support the tape-line on the index fingers at the lowest angle of the shoulder-blades. The word "Low" being

NOTE.—Figs. 54, 55, 56, 57, 58,—are printed here through the courtesy of D. Appleton and Company, publishers, 436 Fifth Ave., New York, from the latest edition of "The Diagnostics of Internal Medicine" by Glentworth Reeve Butler, A.M., M.D.

a lingual sound rapidly clears the lungs and by carefully observing the minimum of the measure the expiration is the more certainly taken. The inspiration of the re-enlisted man as a rule exceeds that of the recruit, and may be a means of suspecting him of having previously been a soldier.

The extension of the whole body (Fig. 10) relaxes the places



F.g. 55. Diagram showing "Insufficiency and Stenosis."

where hernias protrude, making them, if present, apparent. The third finger of the right hand is very sensitive on its outer border. The little finger in the inguinal canals does not unduly stretch them, as the ready index finger would, besides it more precisely discovers the condition of the internal inguinal rings.

The stripping of the penis backward discloses the degree of

phymosis or other hidden affections, opening the meatus by the thumbs of the man shows the state of the mucus membrane of the anterior urethra.

The spinal curvature is recognized by the direction "Stand straight," Ex. No. 5 of the Lower Extremities, (Fig. 11), and the degree of horizontality of the arms noted, (Fig. 12). The backbone is a column if exactly perpendicular will support the shoulders absolutely level (Fig. 52) but if that column is curved one or the other shoulder must droop. Should the arm be extended horizontally the departure of the arms and hands, from a level line with the tips of the fingers of each hand, being as extended nearly the height of the body of the man, will emphasize the drooping. The reason of this is that the physical effort to straighten the back or render the spinal column as perpendicular as he can, will make the "truss" muscles that maintain the shoulders "square" soon to fatigue, and assume a posture that reveals any defect in an exaggerated form. (Fig. 12, line "A" is to line "B.")

The heels and toes together tell the degree and permanency of knee deformities (Figs. 16 and 17). The kneeling exercise detects the symmetrical nerve-supply of the thigh muscles, or an ailing hip-joint (Fig. 18). One able to raise the whole body on the toes of each foot and maintain his equilibrium exhibits his power to walk and support the load he will have to carry; otherwise, it indicates more or less serious defect (Fig. 19). The "squat" detects such faults as hernia, varicocele, hip deficiencies (Fig. 20). When the man kneels on one knee any scrotal imperfections are quickly seen (Fig. 21). The exercises in Figs. 22 to 26 are intended to disclose any stiffness due to former sprains, deep wounds, that would cause failure to follow any drill; those of Figs. 26 to 29 are to reveal splay-foot, flat-foot or hammer-toes. Exercises 1 to 16, Figs. 30 to 50 are to ascertain the integrity of the upper extremities and are followed by the 17th and 18th exercises *immediately* so that the heart may be compelled to manifest its secrets to the ear.

Figs. 51 to 58 show where these vital points are topographically. It is unnecessary to dwell at length upon the methods of

utilizing the information so graphically shown in these illustrations. They accentuate, however, the points at which auscultation and percussion are especially essential and bring out in stronger relief the localities in which disqualifications should be

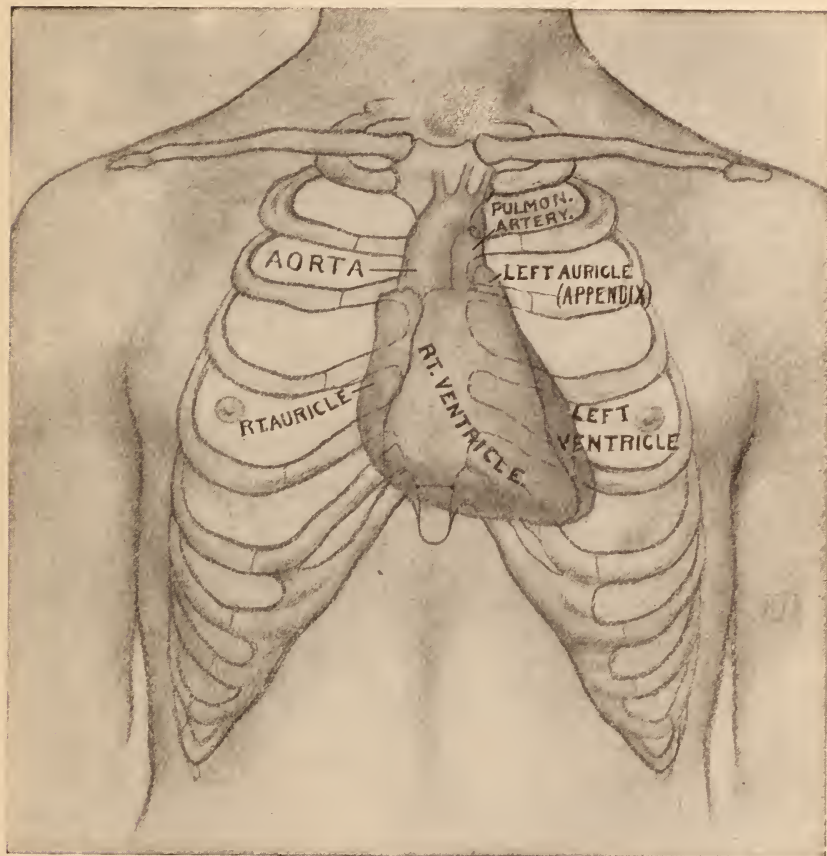


Fig. 56. View of the normal heart, front.

sought for, as well as the defects themselves,—and will be found of great value for these purposes.

These examinations take from 30 to 40 minutes for each recruit, depending upon the mental calibre of the individual before

the surgeon. In a great number of men by having one recruit see another go through the "motions" it may reach the rapidity of three or four an hour, if continued for several hours consecutively, with a sergeant and orderlies familiar with their duties.

These exercises are graphically expressed so that one may "*read the pictures.*" Those interested should try to obtain a conception of how thorough the exercises are by practicing them personally.

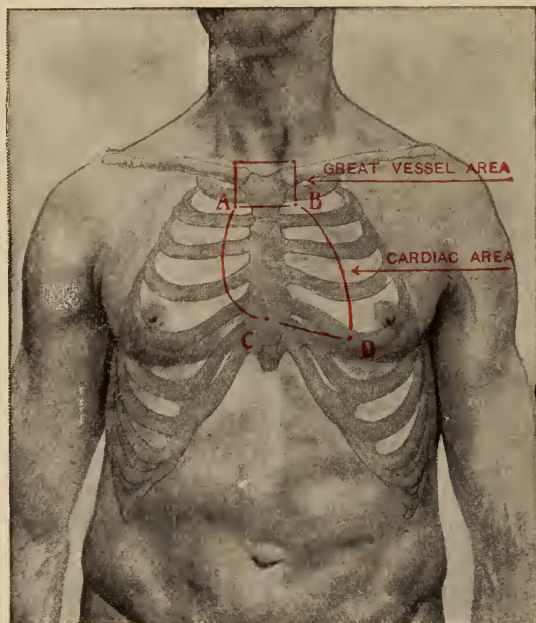


Fig. 57. Places on the chest to examine the heart.

They have rewarded me in having no rejections for twenty odd years due to neglect of observation and notation; although sometimes there has been an honest difference of "the degree of disability."

It is the hope that attention directed to this vital fact, the initial examination of the recruit, will add good men to our National Police—the United States Services.

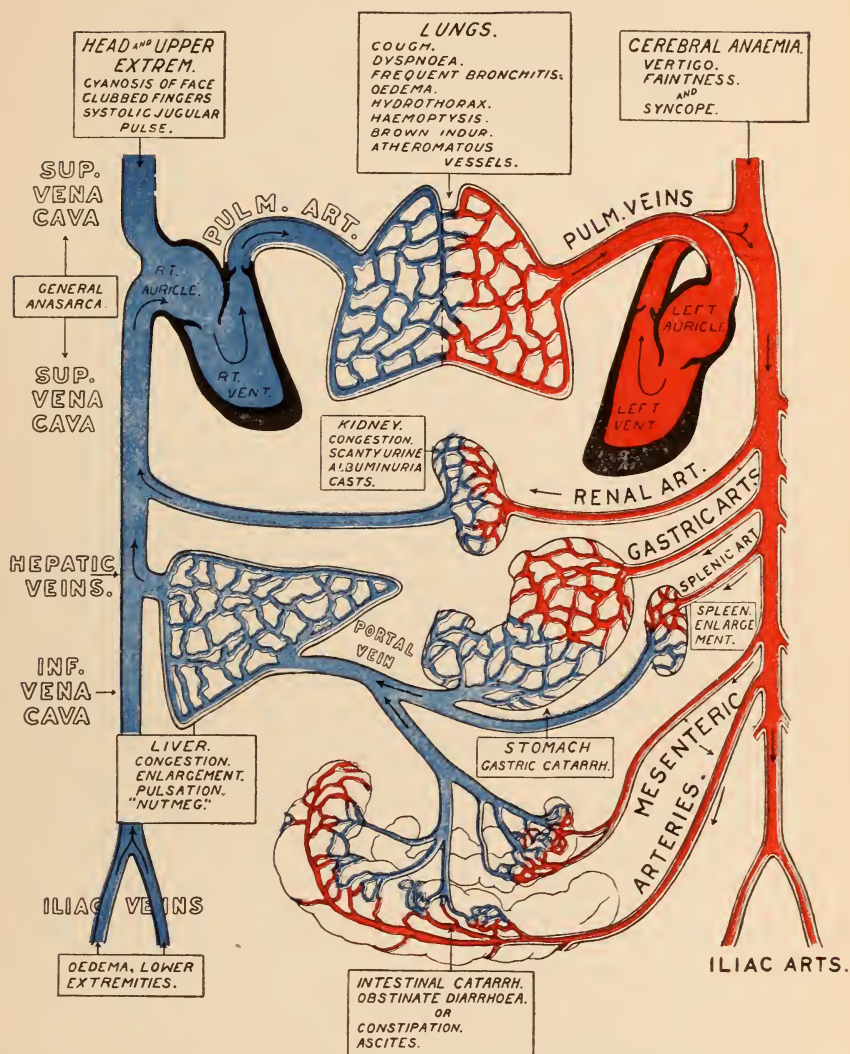


Fig. 56. Diagram showing effects of Valvular Lesions.

THE PHYSICAL EXAMINATION OF RECRUITS FOR THE ILLINOIS NATIONAL GUARD.

BY MAJOR CHARLES ADAMS,

MEDICAL DEPARTMENT OF THE ILLINOIS NATIONAL GUARD,
ASSIGNED TO THE FIRST INFANTRY.

TWENTY-THREE years ago the writer was honored by appointment as Captain and Assistant Surgeon to the First Infantry, Illinois National Guard.

He was somewhat astonished to find that no more was required of him than to accept the appointment and to parade with and accompany the regiment to camp. Enquiry as to the equipment for taking care of the sick or injured men, was met by the information that supplies when needed might be procured from the nearest druggist and the bills sent to the Surgeon General.

There was at that time no system of examination of recruits or officers physical or otherwise: good fellowship and a more or less military appearance seemed to be the main qualifications for admission to the guard.

The senior officers of the regiment were, however, men of civil war experience and well qualified for their positions.

My first care was the fitting up of a regimental medical and surgical chest which served its purpose for about ten years in the annual encampments and at such times as the regiment was called out on strike duty.

At my first encampment the necessity for physical examination of recruits prior to enlistment was strongly impressed on me by a case of epilepsy. The man was busy with fits for all of one afternoon. His history showed that he had been the subject of epilepsy nearly all his life. I recommended his discharge on account of physical disability and the necessary papers were forwarded in proper form.

On request, permission was obtained from the commanding officer to make such examination of recruits as could be carried

out by interrogation, but at that time he did not consider physical examination advisable.

At the next annual encampment I was called to see a man suffering from epilepsy and found him to be the epileptic of the year before who had not been discharged. At this time his discharge was secured on the ground of physical disability.

At the next annual encampment while acting temporarily as brigade surgeon I was called to see a man in the First Cavalry I.N.G. and found him to be the same individual who had been discharged from the First infantry and had promptly reënlisted in another regiment.

The interest of the commanding officers being aroused a form of physical examination was adopted in the First Infantry, which was carried out with increasing strictness from year to year until 1898.

The results of the stricter physical examination were apparent at the outbreak of the Spanish American War when on the mobilization of the Illinois National Guard at Springfield a larger proportion of recruits was accepted from the First Infantry than from any other regiment of State troops.

Since the reorganization of the regiment after the Spanish American War the examination of recruits has been made to conform as closely as possible to the standard of the regular establishment. We employ Greenleaf's "Epitome of Tripler's Manual" and the "Manual for the Medical Department" as guides for the physical examination of recruits, and the blank submitted herewith which is almost identical with that used in the Army recruiting offices.

The details of the method followed in the First Regiment and adopted as a part of the Naval and Military Code of the State of Illinois which were devised by Captain S. C. Stanton, Assistant Surgeon, Illinois National Guard Assigned First Infantry, are as follows:

1. The examining officer having first verified the answers of the recruit to the questions on the form for physical examination, before the recruit is stripped, will test the vision and hearing, each eye and ear being tested separately. If the recruit pass

these tests he is directed to remove all clothing.

2. His height, weight, chest and abdominal measurements and chest mobility are then taken by the examining officer and recorded by the Hospital Steward.

3. The recruit is then put through the following series of exercises designed to reveal any physical defect. The medical officer standing six feet from and facing the recruit:

A. Extend arms forward, fingers extended and separated, close and open fists, flex and extend wrists, pronate and supinate arms to fullest extent.

B. With closed fists at breast strike out successively in forward, lateral, upward and downward directions from the breast.

C. Standing on the left foot the right foot advanced, the knee slightly flexed, flex, extend and rotate foot on ankle, repeat with left foot.

D. Keeping back perpendicular, squat on heels and resume former position.

E. Hop twenty feet on the ball of right foot in long hops, and repeat with the left foot.

4. The examining officer will then immediately ascertain the condition of the heart and lungs of the recruit by auscultation with the stethoscope and percussion.

5. He will examine the head for evidence of skull fracture, note and record the number and condition of the teeth, examine for hernia, defects of the genital organs, venereal disease, varicocele, hemorrhoids, anal fissure, varicose veins, flat foot, painful corns and bunions, and stinking feet.

6. Beginning at the head he will note and dictate to the Hospital Steward for record on the figure card all marks of identification on the exterior surface of the body, the recruit standing erect with palms of the hands to the front. In like manner, the recruit standing with his back to the examining officer, the marks of identification on the posterior surface of the body are noted and recorded.

All defects found, not sufficient for rejection, are to be noted and recorded by the Hospital Steward on the physical form.

The examination having been completed the examining officer will revise and sign, in triplicate, the form for physical examination.

ILLINOIS NATIONAL GUARD.

Physical Examination of a Recruit.

Name Address

Born at Date

Age years. Occupation

Complexion Hair Eyes Last vaccination successful

Are you a citizen of the United States? Have you ever applied for enlistment and been rejected?.....

Have either of your parents, or any near relatives, had consumption or any other constitutional or hereditary disease?

What illness have you had since childhood?.....

Are you subject to coughs? Shortness of breath? Fluttering of the heart?

Diarrhœa? Pain in the breast? Piles? Rheumatism? Do you believe yourself to be strong and well now? Have you ever had fits?.....

Any venereal disease? Painful corns or sore feet?..... Have you ever been ruptured? What injuries or operations have you had?

..... Applicant.

EXAMINING OFFICER'S REPORT.

General appearance Height in. Weight pounds

Vision { Right Hearing { Right

Left Left

Chest Expiration in. Inspiration in. Mobility in.

Abdomen, girth, in. Skin Genito-Urinary Apparatus

Extremities, upper Lower

Remarks

.....

I certify that I have carefully examined above-named recruit, and that he has no mental or physical defect disqualifying him for service in the ILLINOIS NATIONAL GUARD.

..... and Surgeon Ill. N. G.
Assigned to First Infantry.

CHICAGO.

Date 19

NOTE—To be made out in triplicate, one copy forwarded with enlistment papers, the others filed at Surgeon's headquarters.

Fig. 1. Form for the Physical Examination of a Recruit.
Reduced one half. Obverse.

EXAMINATION OF RECRUIT.

.....
 for Company First Infantry, Illinois
 National Guard, examined and found to be

 and Surgeon III. N. G.
 Assigned to First Infantry.
 CHICAGO, .
 Date 19.....

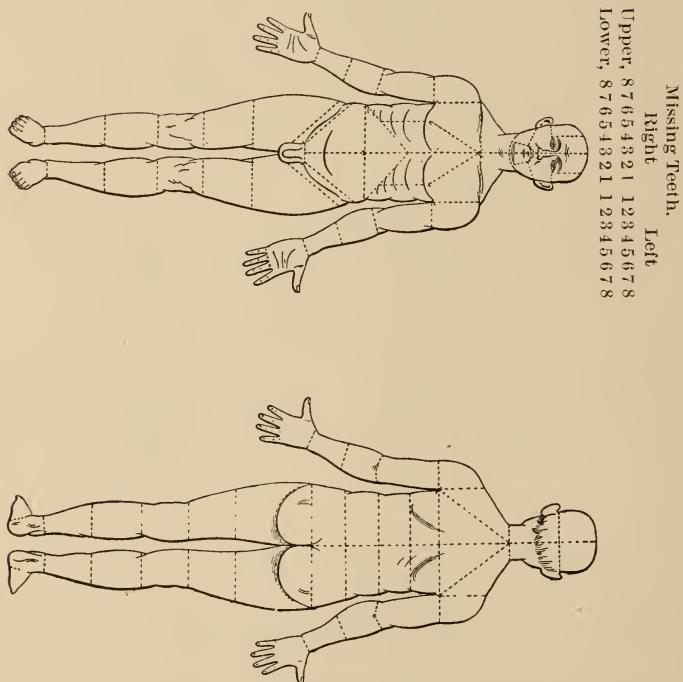


Fig. 2. Form for Physical Examination of a Recruit.
 Reduced one half. Reverse.

One copy of the form for physical examination should be retained by the Medical Officer, the second returned to the Company commander for transmission to the Adjutant General and the third transmitted to the Surgeon General.

The methods of examination are set forth in greater detail in the works to which reference has been made, but suggestions may here be proper regarding some points wherein deviation may be allowed from the Manual and the Epitome.

(a) Vision as determined by the official test-types must not fall below $\frac{1}{2} \frac{5}{0}$ in either eye and not below $\frac{2}{2} \frac{0}{0}$ unless it can be made normal by proper lenses. It must be remembered that exceptions cannot be made for the right eye.

Under existing conditions we believe it impossible to fill the ranks of the National Guard if the standard of vision prescribed for the Regular Army be adhered to strictly.

Color blindness should be made subject of test in recruits for the Signal Corps or Naval Reserve.

(b) Height, weight, and chest measurement should conform to the "Table of Physical Proportions," with the same latitude that is allowed by the Manual, viz., a variation of a fraction of an inch in height below the minimum of five feet four inches, and of two inches in the minimum chest measurement on forced expiration, and further, a certain amount of discretion, in National Guard enlistments, must be exercised by the examining officer in accepting or rejecting minors not fully developed. For such, the instructions given in the Manual for the examination of cadets for West Point may be followed with careful estimate of the possible staying power of the young recruit.

(c) In estimating chest mobility the examining officer must see that the expansion is secured by inflation of the lungs and not by the trick of contraction of the abdominal muscles, thereby forcing the diaphragm upward and the chest walls outward, which may produce an error of four inches.

(d) Varicocele, in the examination of recruits at Springfield, Ill., in 1898, was found in 21.17 per cent of 9,801 men. Of these 982 were slight, 692 medium and 295 large in size. The rule adopted at present by examining surgeons for the United States Army is to reject when the varicocele exceeds the size of the tes-

ticle. The experience of our troops in the Philippines shows that only those men having very large varicoceles suffered from them on long marches or under trying climatic conditions. Varicocele has been for years much of a bugbear to the civil as well as to the military surgeon. We know that more than twenty per cent of young men are subject to this condition, only a comparatively small proportion of these are ever operated, yet a varicocele in a middle aged man is a rarity. Only large varicoceles require operation, or, rather, are likely to incapacitate for duty and therefore are those only which should be cause for rejection.

The element of prime importance to be considered in enlisting men for the National Guard is the fitness of the recruit to become a soldier and to withstand the possible hardships of a soldier's life.

During the past thirty months 716 men have undergone physical examination for enlistment in the First Infantry; of this number 633, or 88.4 per cent, were found physically fit for service.

The remainder, eighty-three or 11.6 per cent, were rejected for the following causes:

Defective vision	37
Defective hearing	3
Defective and missing teeth	1
Deficient height	6
Deficient weight	3
General unfitness for service	6
Cardiac lesions	18
Extensive varices	2
Hernia	2
Goitre	3
Venereal disease	2

Defects of vision were cause for rejection in thirty-seven men, mainly for myopia, one for absolute blindness of one eye and one for loss of one eye.

Defective hearing on account of ancient otitis media was noted in two men and chronic otitis media was present in another.

One man presented a serious tachycardia and in several others were found various valvular lesions disqualifying for ser-

vice but in nearly every instance unknown to the man himself and of course not likely to have been noted by a layman.

In every instance of deficient weight and poor physique there was marked shortcoming the recruits being dismissed with advice as to gymnastics and physical culture.

One man presenting perfect physical condition, being a model in fact, but falling short two and one half inches from the standard minimum for height was passed with the acquiescence of the company commander.

All existing physical defects not disqualifying for the service were noted in the papers of those accepted, and were as follows:

Slight deformities of feet.—

Slight hammer toe	7
Deformed little toes	2
Deformed great toe	1
Flat foot	13
Splay foot	1
Missing little toe	1
Webbed toes	1

Slight deformities of legs.—

Bowlegs	5
Knock knees	3
Ancient fracture	1

Slight varicoses.—

Legs	7
------------	---

Varicocele.—

Small	83
Medium	65—20.06%

Varicocele occurred on both sides, in two instances of slight and in three of medium size.

Cryptorchidism occurred once on right and once on left side.

Atrophy of testicles generally stated as due to mumps was found in eight instances.

Slight external hemorrhoids	19
Hypospadias	1
Depressed ribs	1
Depressed sternum	1
Slight pigeon breast	12
Slight lateral curvature, spine	16

Slight posterior curvature spine	1
Slight goitre	5
Deformity of finger	5
Ancient fracture of elbow	1
Round shoulders	1
Irregular heart	2
Operation scars were noted in six instances.—	
Appendectomy	2
Appendectomy and hernia	1
Hernia	1
Varicocele	1
Harelip and cleft palate	1

Eight men presented no evidence of vaccination affirming that it had been repeatedly tried without result and one man presented absolutely no skin marks for the figure card except a vaccination scar.

In all cases of pigeon breast, depression of sternum or deformity of spine, careful examination was made for visceral or bony defect before the acceptance of the recruit.

Under the New Code of the State of Illinois all candidate officers are required to undergo a physical examination identical with that prescribed for recruits, and candidate Medical Officers in addition are examined as to their professional fitness for the Medical Department.

Examinations of candidates for admission to the Medical Department are held semi-annually and include the following branches: Anatomy, Physiology, Chemistry, Materia Medica and Therapeutics, Pathology and Bacteriology, Hygiene and Sanitation, Practice of Medicine, and General and Military Surgery. Candidates are required to identify six or more pathological specimens with the microscope and to perform operations on the cadaver.

The present efficiency and high standing of the Medical Department of the State of Illinois as compared with its condition twenty years ago is due in great measure to the untiring efforts of the founder of this Association, Colonel Nicholas Senn, Surgeon General of Illinois, and to the coöperation of the Association of Military Surgeons of the State of Illinois which was founded by Colonel Senn early in his official career.

MEDICAL AND SURGICAL OBSERVATIONS DURING A THREE YEARS' TOUR OF DUTY IN THE PHILIPPINES.*

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DYSENTERY IN THE PHILIPPINES.

DISEASES of the intestinal canal are the special bane of our troops serving in the Philippines. During 1902 and 1903 there were for the Pacific Islands 26,558 admissions from this cause alone with 239 deaths. This high degree of non-effectiveness has persisted in spite of our efforts to place the hygiene of our troops in the best possible condition, but nevertheless we can derive decided encouragement from comparing the lessened admission and death rates of 1902 with the similar ratios of the preceding year. Thus in 1902 the admission rate per 1,000 was 495.02, with a death ratio of 4.92, while in 1903 both ratios had fallen to 330.11 for admissions and to 2.21 for deaths.† It is not within the province of this paper to enter into the discussion of intestinal diseases, as a class, in the case of our troops serving in our Eastern possessions, so with the exception of *sprue*, I shall be compelled to limit further attention to that most dreaded member of the class—*dysentery*. I shall here give in condensed form the statistics for dysentery alone for the years just referred to.

TABLE IV.

ADMISSIONS FOR DYSENTERY IN THE PACIFIC ISLANDS FOR 1902 AND 1903 WITH ADMISSION AND DEATH RATIOS PER 1,000.

YEAR.	ADMISSIONS.		DEATHS.	
	Number.	Ratio.	Number.	Ratio.
1902	4370	115.71	156	4.13
1903	2138	89.77	43	1.80

*Continued from the March JOURNAL.

†See Reports of the Surgeon General of the Army for 1902 and 1903.

The explanation of this encouraging improvement in both ratios during 1903 over those of 1902 must be sought in the improved sanitary conditions surrounding the troops in 1903, as compared with former years, which markedly lessened the admission rate, and in the fact that the medical officers serving in the Philippines have thoroughly realized the uselessness of holding for treatment in the Tropics relapsing cases of dysentery, and dysenteric patients who fail to exhibit signs of improvement under the most efficient treatment. By transferring such cases to the United States before it is too late the death ratio has been reduced as indicated.

While I was in command of the First Reserve Hospital (now Division Hospital) Manila, through which institution the victims of Tropical disease among the military personnel in the Islands were invalided home, I made it a rule that, when a dysenteric patient failed to show a decided improvement in a reasonable time after his arrival at the hospital, he should be transferred to the U.S. Army General Hospital at San Francisco by the next transport leaving Manila. I believe that a great many lives were saved by this policy, and many soldiers preserved to future usefulness, who would otherwise have become hopeless invalids, and burdens upon the hands of the government.

The types of dysentery generally seen in the Philippines are the following:

Amoebic dysentery—Acute and chronic.

Catarrhal dysentery—Acute and chronic.

Specific dysentery (Shiga)—Acute and chronic.

At the First Reserve Hospital our experience was that the cases of amoebic dysentery so far outnumbered the remaining types of the disease that when the term "dysentery" was used the amoebic infection was understood. Specific dysentery (Shiga infection) has been very rare at the hospital mentioned during the past two years, and consequently it is safe to assume that it is becoming comparatively rare in the Islands. During the fiscal year ending June 30th, 1904 only one case of Shiga infection was treated at the First Reserve Hospital though in the month of August following, two cases were admitted simultane-

ously, both victims, strange to say, being from members of the medical staff of the hospital. The relative proportion in which these forms of dysentery occur at present in the Philippines may be estimated approximately by the record of dysenteric cases treated at the First Reserve Hospital during the fiscal year ending June 30th, 1904, which I find in my annual report as commanding officer for that year.

Dysentery, Amoebic.....	268 cases.
Dysentery, Specific (Shiga).....	1 “
Dysentery, Catarrhal.....	34 “
Total.....	303 “

The form of dysentery, therefore, which we have most to dread in the Philippines is the amoebic type, and as the catarrhal form offers nothing peculiar, or different from the same affection elsewhere, I shall limit my remaining remarks upon dysentery to a discussion of the type first mentioned.

As shown by Musgrave and Clegg in their valuable report “Amebas: Their Cultivation and Etiological Significance,” published in 1904, amoebae are almost ubiquitous in the Philippines. These parasites are found in almost all of the surface waters, almost constantly being obtainable by cultivation from such waters, and are carried by the surface flora generally of the Islands. Some of these amoebae certainly belong to the class, which is pathogenic to man. An attempt has been made to distinguish the pathogenic from the non-pathogenic varieties but the possibility of any such distinction is highly improbable, as shown by the observers referred to. Thus the larger amoebae, which contain red blood cells, have been declared *pathogenic* and the smaller forms, which do not contain such red blood cells, have been considered *non-pathogenic*. Under this classification the former have been designated *amoebae dysenteriae*, and considered the causative agents of amoebic dysentery, while the latter species have been christened *amoebae coli*, and viewed as harmless. Musgrave and Clegg state, in this connection, that the size and other morphological appearances have no relation whatever to the pathogenic, or non-pathogenic qualities of amoebae, and go on to say that “There are many cases of

amebiasis, which run the regular course and at the necropsy show the typical lesions, but in which inclusions of red blood cells by the amebas are not observed in repeated stool examinations during life. There is even evidence to show that the presence of such cells is not an indication of parasitic activity, but rather one of decay, or degeneration." I quote in full the above paragraph from the publication referred to as the opinion has been quite common in the Philippines that only the large amoebae containing red blood cells were indicative of amoebic dysentery.

The admirable experimental work of Musgrave and Clegg have justified them in advancing the following proposition as well: "*All amebas are, or may become pathogenic. This proposition pending a complete solution of the problem is the only safe one to adopt from the standpoint of public health in the Tropics.*"

This being true, it is worse than useless for medical men in the Tropics to attempt to distinguish between the so-called pathogenic and non-pathogenic varieties, and the proper conclusion for the medical officer to adopt is that it is wise to look upon all patients, in whose stools amoebae are found, as dysenteric cases, and to treat such cases accordingly.

The observations of Musgrave and Clegg go to establish the probability of the proposition that in any individual case the presence of amoebae in the stools, even in apparent health, is pathological, and that in the great majority of such cases, at least, amoebic dysentery may be expected to occur. These observers made a series of careful investigations in this direction with the following results. As the result of the microscopical examinations of the stools of 343 individuals, 300 of whom were miscellaneous prisoners in Bilidid Prison, amoebae were found in 109. Of these 109 persons, sixty-four showed symptoms of dysentery at the time of the examination, but the remaining forty-five exhibited no signs of the disease and could give no history of ever having been so affected. Of these forty-five seemingly healthy individuals, in whose stools amoebae were found, nine died with lesions of the disease and sixteen others developed dysentery during the two months following, sixteen contracted the disease

within four months, one during the sixth month, and three were lost sight of. This array of facts is most suggestive to say the least, and may well cause the careful physician to be on his guard when amoebae are discovered in the stools of his patients, even though they may present no symptoms of dysentery at the time. Musgrave and Clegg have cultivated amoebae from the Manila water supply, from green vegetables, from fruit and other articles, and have, with the pure varieties so obtained in symbiosis with harmless bacteria, produced experimental dysentery in monkeys, and after death have recovered the amoebae from the intestinal lesions peculiar to the disease. These observers have likewise produced experimental amoebic dysentery in the healthy human subject, by administering by the mouth, in three ordinary capsules, scrapings from a culture of their "Ameba No. 11,524."

My apology for making so many references to this valuable report of Musgrave and Clegg is the great practical importance of the subject of amoebic infection not only to the practitioner of tropical medicine, but to every American, man, woman, or child, living in the Philippine Islands. To the medical officer of the Army the admirable work of these observers has furnished results, which are invaluable.

Means of Prevention: 1. As regards the water supply.—As has been shown in the preceding pages, virtually all of the surface waters of the Philippine Islands are infected with amoebae. The tanks in the towns, in which rainwater is stored, and the storage reservoirs in hotels, boarding-houses, and other public buildings, where so-called distilled water is kept, are almost universally infected. Even the tanks in the official distilling plants have at times been found to contain amoebae. At the distilling plant of the First Reserve Hospital, which was under my jurisdiction, where every possible care was taken with the storage tank, which was frequently subjected to the action of live steam, and to other systematic treatment to destroy infection, amoebae were discovered at one time in the distilled water as it came from the tank. In order to prevent such occasional contamination we found it necessary to remove the aerating apparatus and to receive the condensed steam directly into the tank. After securing

this direct connection between the boilers and the tank no amoebae could be discovered in the output. The water supply of the inter-island transports and the water-coolers in the public offices in Manila, where only distilled water is supposed to be used, are frequently found to contain amoebae. Even the water bottles in which distilled water is kept in the refrigerators of private houses, may become infected from lack of care in their treatment, and, in this connection, it is interesting to note that Musgrave and Clegg have secured cultures of amoebae from this source from five private houses in Manila. The tap water of the Manila water supply is notoriously infected with these parasites. From this array of facts it is evident that too much care can not be paid to the water supply of commands and families in the Philippines in order to avoid this infection. Even in the case of distilled water, what is supposed to be a perfectly safe and pure product may become infected, even if it leaves the distilling plant perfectly free from amoebae. Careless handling of water cans on the part of the native employees delivering the same in Manila is notorious, and after being delivered at barracks, or at private residences, fresh means of infection through ignorance and carelessness are readily at hand. The water bottles, in which the distilled water is placed for use, are frequently rinsed with tap water, and the distilled water then poured in, or the cans containing the day's supply are left open, or the water is dipped out with dirty vessels, which have just contained tap water. Then again the use of the water from the tap to wash crockery, and glassware may cause infection, as may, also, the habit of washing articles of food, as fruit, and vegetables, which are to be served uncooked, with the ordinary water of the general supply.

Another source of danger is the use of tap water to dilute the canned milk and cream, which virtually constitute the sole milk supply of the Philippines, where a milch cow is a *rara avis*, indeed. I was once living for a short while at a boarding house in Manila, the proprietor of which prided himself upon the use of distilled water for drinking and cooking purposes. One day one of the members of my family happened to observe the cook, who was preparing the ice cream for dinner, and was shocked to

see this Celestial calmly put the can of cream under the faucet of the city water supply to secure the necessary dilution. Such inconsistencies are far from uncommon in the Tropics. Efficient care in one direction, is frequently vitiated by criminal carelessness and dense ignorance in another. Educated people in Manila will use every care in the matter of their drinking water, and yet be guilty of committing the imprudence of using tap water for brushing their teeth, or rinsing their mouths, or will give themselves enemata with water from the same source. The only efficient means of preventing infection from this source in the Philippines is the adoption of the fixed rule to use no water for drinking purposes, for cleansing the buccal cavity, or for introduction into the bowel which has not been boiled, whether the original source was from the distilling plant, or from the general water supply. I followed this rule in my own household for the entire three years of my stay in the Islands.

All crockery and glassware, as well as knives, forks and spoons should be washed in boiled water, and all use of tap water for culinary purposes should be prohibited. Of course in the act of cooking, the water used in the preparation of any particular dish would necessarily be sterilized, but there are many occasions in the kitchen when cold water is required to be added to food, and in such addition there is grave danger of conveying infection. We cannot always trust to the discrimination of company cooks, or to the sanitary instincts of our native servants in the Tropics, and hence a fixed rule in this regard is a wise provision. *The tap is frequently more "handy" than the distilled water bottle.*

2. As regards the use of food products.—The surface flora of the Philippines being infected generally with amoebae (Musgrave and Clegg), it is evident that special care should be exercised in the use of native vegetables and fruits. Lettuce cultivated at the Agricultural Experimental Farm, has become quite extensively used in Manila, under the supposition that having an attractive appearance, and being produced under American auspices, the sanitary objections urged against this vegetable, when obtained elsewhere, would not apply in this instance. This

is a serious error, as this lettuce is highly infected with amoebae as proved by Musgrave and Clegg, who carefully washed a sample five times with sterile distilled water, under laboratory precautions, and from the *fifth washing* obtained cultures of amoebae, with which they communicated amoebic dysentery, through feeding, to two of three monkeys used for the purpose of experimentation.

The surfaces of tomatoes grown in the Islands carry the infection very frequently, and the same may be said of parsley, and of other green stuff, as well as of many of the native fruits. From these statements, which are founded upon results obtained in the laboratory by Musgrave and Clegg, it can be well understood that *no uncooked native vegetables should be served at the table in the Philippines either in private families, or in the mess-rooms of military organizations, and furthermore that the use of green stuff, as parsley, to garnish dishes is most ill-advised.* To those, who will persist in eating raw tomatoes, the advice may be given to carefully scald each tomato with boiling water just before serving, but in the mess rooms of the troops, where military supervision can be exercised, even this compromise should be prohibited, and this vegetable, if used, should be required to be invariably cooked.

The same treatment with boiling water should be accorded to all native fruits as well, though, in my opinion, the less use made of the fruits grown in the Islands on the part of Americans, the better. Ice cream may likewise prove a fruitful source of infection, where infected water has been used to dilute the canned cream, which invariably takes the place of the fresh article in the Philippines. Great care should consequently be exercised in this regard on the part of all housekeepers, and the same caution will apply to the preparation of ices generally.

In this connection, it may be well to invite attention to the fact, as shown by the Manila observers, so frequently mentioned in this paper, that when exposed to cold, as in ice cream for instance, the amoebae become encysted, in which form they are especially virulent. I think that Americans in the Philippines should avoid, on principle, the ice cream parlors, and soda water

fountains which are now becoming so popular there, especially in Manila.

Symptoms and Diagnosis: The symptomatology of amoebic dysentery is familiar to all medical officers of the Army, who have served in the Philippines, and can be found fully described in systematic treatises on Tropical medicine, and hence such description has no place in a paper of this character. I shall mention one point, however, in this connection, with which we became familiar in the Philippines, and that is this: Frequently patients affected with "amebiasis" will not, at first, present the classical symptoms of dysentery, but will be induced to consult the physician on account of attacks of diarrhoea accompanied by fleeting abdominal pains. In all such cases, the stools should be examined for amoebae as a routine measure. As far as the *diagnosis* is concerned, the *discovery of amoebae* in the stools of patients suffering from diarrhoeal, or clearly defined dysenteric attacks, *is sufficient to justify the diagnosis of amoebic dysentery, whatever the morphological appearance of the parasites may be.*

Treatment: The treatment of amoebic dysentery will be dismissed in a few words. The general consensus of opinion on the part of medical officers of the Army and civilian physicians (American) in the Philippines, is that the best treatment of amoebic dysentery is a preliminary dosage with salines, which markedly lessens the tormina and tenesmus, and a systematic treatment afterwards with quinine irrigations of the colon. The strength of the quinine solution should be from 1-1500 to 1-500. Generally 1-1000 is the most appropriate strength to begin with, which may be gradually increased.

It is important that the solution should come in contact with the mucous membrane of the entire colon, and that it should be retained from five to fifteen minutes. The position generally used for the administration of these irrigations is the Sims, and it is well to have the patient's hips raised either by elevating the foot of the bed, or by using a special lounge for this purpose. There are two methods in use in administering these injections, and the choice of the profession in the Philippines seems pretty evenly divided between the two. One method is the passage of

the injection tube through the sigmoid flexure and the direct irrigation of the colon, and the other is the simple injection of the quinine solution into the rectum from a fountain syringe, or similar apparatus, trusting to position and gravity to carry the medicated solution through the sigmoid flexure into the colon. Practical results seem to indicate that the one method is as efficient as the other. It is certain that quinine solution of the strength indicated is fatal to amoebae, and hence this treatment is entitled to be considered *specific*. The use of large doses of ipecac, after the English method in vogue in India, is advocated by some medical officers, and excellent results have undoubtedly been obtained under such treatment in certain cases, especially in the earlier stages of an attack of amoebic dysentery, but as a treatment for general adoption it should not be considered comparable to the quinine treatment by bowel irrigation. The *olive oil treatment* by the mouth is only mentioned to be condemned. However excellent the results secured in the United States by this means in the case of returning dysenteric patients, it is certain that this treatment is not beneficial in the Philippines. At the First Reserve Hospital, Manila, it was tried in a limited number of cases, but the results, when not positively injurious from anorexia caused by the oil, were so unsatisfactory that I ordered the discontinuance of the treatment. It would be difficult to understand what influence olive oil could have upon the pathogenic action of amoebae, and if its administration, under which marked gain in weight has been claimed in the United States, is advised upon its supposed influence in promoting constructive metamorphosis of the tissues, such administration is certainly contraindicated in the Philippines, as proved by actual trials at the First Reserve Hospital.

Bismuth in the form of its salts, the *subnitrate* and the *subgallate*, have had a very extended use in the Philippines and such excessive and indiscriminate employment is to be condemned. The insoluble salts of bismuth impregnate the edges of the intestinal ulcers, and other tissues undergoing necrosis, to such an extent that they form a tenacious coating, which protects the diseased areas from the action of quinine, or other

drugs, used in solution by irrigation. This fact has been thoroughly proved by Musgrave in his post-mortem work in these cases. Clinically, bismuth has little effect either in the way of ameliorating symptoms, or of checking the progress of the disease; while it may do harm, in a negative way at least, by interfering with the local action of more efficient drugs.

SPRUE AND ITS MANAGEMENT.

This disease, peculiar to the Tropics, has made its presence felt in the non-effective list of our troops serving in the Philippines. Sprue, or psilosis, is essentially a serious "form of chronic catarrhal inflammation of the whole or part of the mucous membrane, of the alimentary canal, generally associated with suppression of the chologenic function of the liver, and probably, of that of the other glandular organs subserving digestion. * * * Sprue is characterized by irregularly alternating periods of exacerbation and of comparative quiescence; by an inflamed, bare, and eroded condition of the mucous membrane of the tongue and mouth; by flatulent dyspepsia; by pale, copious and generally loose, frothy, fermenting stools; by wasting and anaemia; and by a tendency to relapse. It may occur as a primary disease, or it may supervene on other affections of the bowels. It is very slow in its progress; and unless properly treated, tends to terminate in atrophy of the intestinal mucosa, which usually, sooner or later, proves fatal." No more space than that occupied by the above quotation from Manson can be spared for a description of sprue, and I shall be compelled to limit my remarks upon this disease to experiences with it in the Philippine Islands.

At the hospitals in the Islands we frequently find sprue occurring alone, or in connection with another disease of the intestinal canal, as amoebic, or catarrhal dysentery. Such was the experience at the hospitals with which I was connected, and especially at the First Reserve Hospital, where these cases were sent from all parts of the Archipelago. The universal tendency of this disease is to an unfavorable termination, and our sprue patients steadily decline in strength, and become more and more anaemic and emaciated in spite of all that we can do, which, indeed, is very little, as drugging is entirely out of place in this

disease. Our efforts for bettering the patient must be limited to the strict use of a rigid milk diet, and rest in bed during the active period of the recurring attacks.

Being a disease induced by service in a tropical climate, little benefit can be expected to result from keeping sprue patients in the Islands. In my hospital experience the results of treatment have been absolutely discouraging, and my belief, founded upon an extended observation of such cases, is that an American officer, or soldier, who becomes affected with sprue in the Philippines, cannot be expected to recover if he remains in the Tropics. I have been informed by a prominent Englishman, who has spent over twenty years in Manila, and who was at one time seriously affected with sprue, that in his whole experience he has never heard of another foreigner, so affected, who remained in the Islands, and recovered. At the First Reserve Hospital, I was so impressed with the importance of getting sprue patients out of the Tropics as soon as possible that it was a fixed rule that such patients should be recommended for transfer to the United States by the first transport sailing after the diagnosis had been verified.

TUBERCULOSIS.

Pulmonary Tuberculosis is extremely prevalent among the natives in the Philippine Islands, where the climatic and hygienic conditions seem well calculated to favor its spread.

The natives have not the slightest idea of sanitary precautions of the simplest character, and if they had they would be too lazy and indifferent to utilize the knowledge. They will expectorate anywhere and everywhere, within their houses and without, and tuberculous natives are no more cleanly than their fellows. As might well be expected, in such a thickly settled tropical country as the Philippines, where filthy habits of living are universal, the infection of tuberculosis is abroad in the land, and as the Filipino race seems to possess a special susceptibility to phthisis, the ravages of the disease among the natives is great. Unfortunately for the Americans, and other foreigners, the infection does not stop with the natives.

The important point in connection with the occurrence of

pulmonary tuberculosis among our troops in the Philippines is not in the increased admission rate over that in the United States, but in the great rapidity, with which the disease progresses in its victims when it once manifests its presence. The only chance for an American, who contracts phthisis in the Philippines, is an immediate return to the United States, where he should seek the arid mountain region of New Mexico or Colorado. This is the rule, which the medical officers of our service have adopted with reference to the military personnel. Officers and enlisted men, who develop pulmonary tuberculosis in the Orient, are at once transferred to the United States, and when they arrive in San Francisco are retransferred to the General Hospital at Fort Bayard, New Mexico. To hold a phthisical patient in the Philippine Islands for several months after the development of the disease, is equivalent to signing his death warrant.

MALARIAL DISEASES.

Malarial affections, as in all tropical countries, are decidedly in evidence in the Philippines, and are responsible for a very high admission rate. At the First Reserve Hospital, which institution received patients from all parts of the Islands, the prevailing type was by all odds the estivo-autumnal, with the tertian next in frequency, and the quartan last and rare.

At this hospital during the fiscal year ending June, 1904, 1,765 blood examinations for malaria were made in the pathological laboratory, of which 464 were positive, as follows:

Estivo-autumnal	366
Tertian	88
Mixed estivo-autumnal and tertian	7
Quartan	3

In the city of Manila, likewise, in general practice the estivo-autumnal was the largely predominating type. For the successful treatment of these cases, at the hospital mentioned, it was the common experience that large doses of quinine were required, and that the hypodermic method of administration was the most efficient.

At this institution, in very serious and alarming cases, as large an amount of quinine as six grammes has been given hypo-

dermically in twenty-four hours, and commonly a daily dosage of three grammes was administered by this method with excellent results. The preparation of quinine used at the hospital during my regime was the dihydrochlorate, and the stock solution was 5 grammes to 10 c.c. of water. In our wards the occurrence of abscess formations from this cause was almost unknown. Four cases of pernicious malarial infection, all of the estivo-autumnal type, resulted fatally during the year just referred to. All of the other malarial patients recovered.

TYPHOID FEVER.

Typhoid fever is comparatively a rare disease in the Philippines. During two years at the First Reserve Hospital only twenty-eight cases of this disease were treated. It cannot be claimed that there were mistakes in diagnosis, and that typhoid cases were wrongly diagnosed as malarial affections.

Strict laboratory methods were required at this hospital, and the blood of every fever patient admitted was carefully and repeatedly examined in the pathological laboratory by skilled microscopists. During the fiscal year ending June, 1904, there were only twelve cases of typhoid treated, which, with the sixteen cases treated in the hospital during the preceding year, made the total number for the two years twenty-eight.

During the fiscal year ending June 30, 1904, with a mean strength in the Philippines of 18,671 men, there were there only eighty-two admissions for typhoid fever, all told, and fifteen deaths among the American troops. The native troops with a mean strength of 4,789 had five admissions and one death only, on account of this disease.* From these figures it can be seen that the claims made in one of the prominent medical journals in the United States, under the editorial caption "The Typhoid Cost of the Philippines," that the prevalence of typhoid fever in the United States was due to our troops returning from the Philippines, who as they returned home would scatter the infection broadcast over the land, were not well founded.

Typhoid fever in the Philippines seems in every way the same disease, with which we are all familiar in the United States,

*See Report of the Surgeon General for 1904.

and no special modification of its symptoms, accidents, or terminations can be attributed to the climate. There is no greater tendency to intestinal perforation there than elsewhere.

During the twenty months that I was connected with the First Reserve Hospital, as commanding officer, only two instances of perforation occurred in our typhoid patients. I operated upon the last of these patients, found the perforation without special evisceration, and repaired the rent. The case however resulted fatally on the fourth day after the operation. At the post-mortem the perforation was found to have been thoroughly closed, and there was no leakage there.

OTHER DISEASE CONDITIONS BRIEFLY CONSIDERED.

Bubonic plague is a disease, of which the medical officer in the Philippines has little dread. Being almost entirely confined to certain districts in Manila, it virtually limits its choice of victims to the Chinese and Filipino inhabitants of these localities, and seldom attacks a Caucasian. It would thus seem that we need feel little uneasiness on this score as far as our troops are concerned. Since the American occupation, as far as I have been able to discover, only three soldiers have fallen victims to plague. Two civilian employees of the Quartermaster Department, one in Manila, and one in Cebu, have likewise contracted the disease. Under our present conditions of military sanitation in the Islands it would be impossible for plague to gain a foothold in a military garrison, but while we have no cause to fear its invasion of our garrisons, we must of necessity take an interest in its manifestations in Manila from the purely scientific standpoint, if from no other. What can be done in the way of suppressing plague in the crowded Chinese quarter of an Oriental city, has been forcibly shown in Manila by the magnificent work of the Insular Board of Health under the direction and supervision of Captain E. L. Munson, Assistant Surgeon, U.S. Army, Acting Commissioner of Public Health during the height of the visitation of this terrible disease. I shall give here a condensed statement in tabular form, which will show tersely the marked success, which crowned the American efforts at suppression of this Oriental pest.

TABLE V.

YEARS.	PLAGUE CASES.	DEATHS.
Jan. 1, 1900–Sept. 1, 1902.....	772	646
Sep. 1, 1902–Sept. 1, 1903.....	198	166
Sep. 1, 1903–Sept. 1, 1904.....	94	87
Sep. 1, 1904–Apr. 30, 1905.....	24	23
Grand total... ..	1088	922

During the month of April, 1905, there were only two cases with two deaths. While this successful work was being prosecuted in Manila, in other Oriental cities, as Hong Kong and Bombay, the disease was well beyond the control of the authorities. There is no doubt that the steady decline of the plague in Manila was directly due to the efficient prophylactic measures instituted by the Insular Board of Health under Munson's direction. Munson in a recent private letter expresses the opinion that the successful results obtained were due primarily to the preventive inoculation of the Chinese, so generally resorted to, and secondarily to the wholesale destruction of rats, averaging about 1,000 per day officially brought in for nearly two years. The results of the protective inoculation of the Chinese were most satisfactory, and it was discovered that with one inoculation a partial immunity was caused, which rendered infection improbable, while after two inoculations, the second administered ten days after the first, *a perfect immunity was secured*. No ill effect from the inoculation was observed in a single instance, and the inconvenience was not as great as that resulting from vaccination.*

Plague does not seem to be especially contagious; in fact the disease from the American experience in Manila, seems to have been rarely transmitted from a plague patient to a healthy person. Munson states in his paper referred to (See footnote) "Infection seems * * * * to have generally proceeded from some outside source, from which, however, several individuals might have become infected at about the same time." The only case of infection among those in attendance upon plague

*The movement of Plague in the Philippine Islands, by E. L. Munson, M.D. *Medical Record*, January 30, 1904.

occurred in a Filipino morgue attendant, who having a raw surface upon his wrist, became infected through this sore while sewing up the bodies of several plague victims after post-mortem examinations at the morgue.

Smallpox: The infection of smallpox seems to be thoroughly disseminated throughout the Philippines, but, while it plays havoc with the natives, the military personnel has not been seriously affected within the last few years. The continually lessening number of cases of infection among the troops, from year to year, is due to the facts that the number of troops serving in the Islands has been steadily diminishing and that the Medical Department, by frequently repeated vaccinations of the military personnel, has been doing everything possible to limit the infection.

The natives are as careless regarding the infection of smallpox as they are concerning that of all other diseases. They make no effort whatever to avoid contact with smallpox patients, and view the whole matter from the standpoint of the Oriental fatalist. There is no reason to dread for the future a higher rate of smallpox infection, on the part of our troops in the Philippines, than that exhibited in recent years.

During the three years 1901, 1902, and 1903 there occurred in the troops in our Eastern possessions, chiefly in the Philippines, 175 cases of smallpox with fifty-two deaths, a mortality of 29.7 per cent.

Diseases of the respiratory organs, with the exception of pulmonary tuberculosis, are of infrequent occurrence. Lobar pneumonia is there a rare disease. I do not think that I saw more than five or six cases of pneumonia during my entire hospital experience in the Islands.

Scarlet fever, diphtheria, and yellow fever are unknown in the Philippines. As far as I have been able to learn not a single case of either of these diseases has ever occurred in the Archipelago.

In the case of *yellow fever*, however, all that is required to inaugurate a reign of terror in the Islands, is the importation of a case of the disease, as the *stegomyia fasciata* is strongly in evi-

dence, and the Eastern mosquito, by right of common inheritance, should possess the family traits manifested by its death dealing brother of Tropical America. When the Panama Canal shall have become a reality, and fast steamship lines shall have become established between the Occident and the Orient, via this ship-highway, such a deadly importation may not be among the impossibilities.

The prevalence of intestinal parasites in the native population is something remarkable. A Filipino can harbor a parasitic menagerie in his intestinal canal, and yet appear little the worse for it. As an instance of this capacity on the part of the native, I shall mention that in the first examination of the stool of a Filipino patient at the First Reserve Hospital, the following ova or parasites, were discovered: *uncinaria duodenalis*, *trichuris trichiura*, *amoeba dysenteriae*, *amoeba coli*, *ascaris lumbricoides*, *tenia saginata*, *megastoma entericum*, *trichomonas intestinalis* and *cercomonas intestinalis*.

Almost all of the Filipino patients admitted to the First Reserve Hospital, on account of their connection with the military service, are hosts for numerous intestinal parasites. In the earlier years of American occupation, *uncinariasis* was not uncommon in our troops, as a result of the duties required of them in those strenuous times. Since 1902, owing to the improved hygiene of the troops as a consequence of changed conditions, these cases are far less frequent. In the pathological laboratory of the First Reserve Hospital during the fiscal year ending June, 1904, out of 1,220 examinations of stools, the ova of *uncinaria duodenalis* were discovered in fifty-one cases. The great majority of these cases occurred among the native patients. In 1902 I witnessed some marked instances of the serious effects of *uncinariasis* upon American soldiers, and in June of that year I saw one fatal result from this cause at Hospital Number Three, Manila, which occurred in the case of a soldier, who was sent to the hospital when too far gone for rescue. The only way in which an individual can acquire *uncinariasis*, is by introducing the *larvae* of the parasite into his digestive tract, whether by food or water, or as a result of filthy habits. The *ova* of the

parasites will not develop in the intestinal canal, and hence, when passed in the feces of an infected person have to undergo larval development outside of the body under suitable conditions before they are capable of causing uncinariasis. In a tropical country, like the Philippines, where the natives pay no attention to either private or public hygiene, and where there is such an extensive prevalence of parasitic affections of the intestines, every opportunity exists for the propagation of such affections through general fecal contamination of soil and surface water. American soldiers campaigning under such conditions can become victims of the disease. The detection of the ova in the stools by microscopical examination is the essential diagnostic point, and in the case of soldiers serving in the Tropics, who begin to manifest marked anaemia with progressive loss of flesh and strength, accompanied by digestive disturbances without visible disease to account for such physical deterioration, such examination should invariably be made. In the treatment of uncinariasis two indications must be met, namely: the expulsion of the parasites from the intestine, and the use of proper means, to relieve the anaemia, which they have induced. Two drugs have been used with great success in the Philippines to fulfill the first indication, namely thymol and male fern, which may be administered under the well established rules governing their use, which need no description in this paper.

[TO BE CONCLUDED.]

FRENCH TREATMENT OF TYPHOID.

IN a recent review of the subject, Dr. Simonin is unable to give complete enteric statistics for all French military hospitals; but says that Military Surgeons in that country prefer the cold bath method of treating typhoid not only on account of their own medical training, but also on account of results obtained at Val-de-Grace and elsewhere.

THE DETECTION OF SIMULATED DEFECTS OF VISION.

BY MAJOR WILLIAM B. BANISTER,

JEFFERSON BARRACKS, MISSOURI,

SURGEON IN THE UNITED STATES ARMY.

HAVING been stationed for nearly two years at this recruiting depot, and considering the large number of recruits who claimed defects of vision, and remembering the difficulty at first experienced in many cases in being able to state definitely whether defects existed (with special reference to refractive errors), as claimed, I thought the system employed here and my experience with this matter might be of value to other medical officers who are, or may be, similarly situated. These remarks are not intended for those officers of the corps who are experienced oculists as they will find but little new or of interest in this article, but for that larger class who, without extended experience in this direction, are placed in a situation where precise and accurate work must be done in this line to properly safeguard the interests of the government.

These cases of defective vision should be divided into two general classes, one due to pathological changes affecting the transparency of the media of the eyes or the tissues of the fundus, the other having reference to refractive errors. For the former class the method of ophthalmoscopy is employed and for the latter, skiascopy, or as it is generally known, the shadow test, or both methods combined. It is obvious that the shadow test would not show as a rule pathological changes in the fundus of the eye, though it will frequently show lack of transparency in the media of the eye, and on the other hand it will be very difficult and unsatisfactory to the inexperienced to attempt to accurately determine errors of refraction with the ophthalmoscope alone, for reasons given later.

The equipment necessary to carry out this system consists of

the eye-test case furnished by the medical department, an ophthalmoscope of approved pattern (usually Loring's is furnished), a student's lamp with a shade (where gas or electric light is not available), a skiascopic eye and a plane retinoscope. The shade for the student's lamp used here is Boekel's improved laryngoscope, furnished by the medical department on requisition, without the mirror bracket and with the lens taken out. Practically it consists of a hollow nickel cylinder, with a circular hole in it, to pass down over the lamp-chimney, the hole permitting the light to fall on the retinoscope while the patient's face is in the shadow. It can be easily improvised by making a hollow cylinder of asbestos to go over the lamp-chimney of the student's lamp, with a circular hole about the size of a half-dollar in it. The skiascopic eye can be bought for one dollar and the plane retinoscope for about the same. The skiascopic eye consists of an outer cylinder with a lens in the front end, and an inner cylinder of brass on the posterior closed end of which an imitation of the fundus of the eye is painted. The barrel of the inner cylinder is marked with a line around it so that when the rear end of the outer cylinder touches this mark the light passing through the lens in the front end will be accurately focused on the artificial retina. Other marks show, when the inner cylinder is pushed in or pulled out, how many dioptries of hyperopia or myopia respectively are produced. By setting the skiascopic eye at normal and putting plus or minus cylindrical lenses from the test-case in front of the skiascopic eye, myopic or hyperopic astigmatisms may be produced and by appropriate cylindrical lenses also compound and mixed astigmatisms for the purpose of practice.

The difficulty with the inexperienced in the use of the ophthalmoscope is the lack of power to thoroughly relax the accommodation, and it is essential to determine how much error in this respect one has. The skiascopic eye is very useful for that purpose as the artificial pupil is roomy and it is not always advisable to dilate the pupil of a soldier with a mydriatic and thereby necessitate his being excused from duty for the purpose of practice. The beginner will usually find that with a plane glass in the ophthalmoscope he cannot obtain a clear view of the fundus

either of the skiascopic or the human eye. In my own case at first I had to use a -4Δ , and even now have to use a -2Δ , to obtain a clear view of the fundus in either case, which lens is the measure of my lack of ability to relax my accommodation. After having determined one's personal equation of error in this respect for the skiascopic eye set at normal it can be set at so many dioptries of hyperopia or myopia, and allowing for your own error, one can soon learn to detect whether hyperopia or myopia is present and approximately the degree. For example, suppose one had determined that his lack of power to relax his accommodation was corrected by -2Δ , and on looking into the skiascopic eye, not knowing where it is set, finds he can see the fundus clearly with a plane glass in the ophthalmoscope, he could readily determine that the skiascopic eye had two dioptries of hyperopia which had neutralized his error of -2Δ . It is this difficulty that so often is discouraging on first trying to use the ophthalmoscope. The skiascopic eye is particularly useful for practicing the shadow test. This test is easy to learn and is very accurate and reliable and requires no co-operation on the part of the patient, and granting the media and fundus are normal in other respects, the state of his refraction can be determined without his saying a word. The test is employed as follows: the room is darkened and the patient is seated at one meter's distance from the observer with the shaded lamp in front of and somewhat to the right of the observer about eight inches from the retinoscope when held in position. I prefer the retinoscope with a plane mirror and in this article the plane mirror is considered as used. It is essential to remember that the refraction of the eye is being tested for infinity and that therefore in testing it at one meter's distance an artificial myopia of one dioptre is produced, and for infinity one dioptre must be added to any myopic condition found and subtracted from any hyperopia found. For instance, suppose the test at one meter's distance shows $-.50$ myopia then $-.50 + -1. = -1.50$, the condition of refraction of the eye for infinity. Again suppose the test shows two dioptries of hyperopia then $+2. - (-1.) = +1.$ and the eye is hyperopic one dioptre.

The observer throws the light into the patient's eye with

the retinoscope until he can see a clear retinal reflex and if on tilting the mirror on its vertical axis he sees a shadow peep out from behind the iris and cross the pupil in a direction opposite to the one in which the mirror moved, in the vertical meridian of the eye, there is at least one dioptré of myopia because with the plane mirror in myopia of one dioptré or more the shadow moves against the mirror. He should now put spherical concave lenses in the trial frame on the patient's eyes of gradually increasing strength till the shadow is reversed and moves in the same direction as the mirror is tilted. The first lens that reverses the shadow is the measure of the degree of myopia at one meter's distance, but one more dioptré should be added to determine the refraction in that meridian for infinity. For instance, if a -3 reverses the shadow -4 is the number of dioptries of myopia present in the vertical meridian. The same procedure is now applied to the horizontal meridian and if in this meridian the shadow also moves against the mirror and is reversed by the same lens, there is present simple myopia 4 dioptries, but suppose that while a minus 3 dioptries reverses the shadow in the vertical meridian it requires minus 5 to reverse it in the horizontal, there is present myopia with myopic astigmatism and the degree of astigmatism is measured by the difference between the two lenses, and the axis of the correcting cylinder should be parallel with the edge of the shadow that requires the stronger glass to reverse it. If in obtaining the retinal reflex and tilting the mirror the shadow moves *with* the mirror the eye is then either emmetropic, hyperopic, or myopic less than one dioptré. Now use a spherical convex lens .50 and if this reverses the shadow in both meridians, there is present simple myopia of .50 since $-1. - +.50. = -.50.$ Suppose it takes $+1.$ to reverse the shadow in all meridians then the eye is emmetropic since $-1 + +1. = 0.$ If it takes $+5.$ to cause the shadow to go against the mirror then there is present 4 dioptries of hyperopia, since $+5 - (-1.) = +4.$ After a little experience the observer can tell almost at a glance whether any marked error exists, because the retinal reflex is dull, the shadow is heavy and moves slowly. In small errors and when no error exists the shadow moves rapidly and is less dense. One will be

surprised to find how quickly one can obtain satisfactory results with this method of practicing first with the skiascopic eye set first for known errors and then for unknown, because owing to the roomy pupil, the play of the shadow can be readily followed and he acquires the faculty of thinking quickly which way the shadow ought to go with the plane mirror under different conditions of refractive error. In applying the method to the human eye, a very small pupil may cause uncertainty as to how the shadow moves, and in that case a few drops of a two per cent solution of homatropine hydrobromate should be dropped in the eye and in a few minutes the pupil will be dilated sufficiently without paralyzing the accommodation, and the effect on accommodation soon pass off. If there is lack of transparency of the media of the eye, if limited, it will appear as a dark spot on the retinal reflex, which does not move with the mirror, and such opacities can be noted and examined later by indirect ophthalmoscopy, when the strong convex lens will show the opacity in a magnified condition. The routine used here in these cases is this, the patient attempts to read the test card at the appropriate distance. If he claims he cannot do so with each eye, tested separately, he is moved up to the distance furthest from the card that he can read it, and his claimed acuity of vision in each eye noted. An ophthalmoscopic examination is then made of each eye, the condition of the media and fundus noted and the refractive error if any. The shadow test is then used and result noted. As one becomes more and more skillful with the ophthalmoscope, he will find that the refractive error so determined will coincide more and more closely with the result obtained by the shadow test, and the latter becomes a useful index of one's improvement in the use of the ophthalmoscope.

Simulated defects of vision is the easiest of all methods of malingering and the number of such cases at this depot has been a matter of surprise to me, and also the quickness with which recruits arriving here find out the fact, and also the fact that the right eye should be the one affected rather than the left, because that eye is used in shooting. Malingerers do not come to the surgeon complaining of their eyes, but claim they are unable to

read the test card when their vision is tested after their arrival here. The question immediately presents itself as to why they would want their discharge so soon after enlistment, and unless they wanted to serve, why did they enlist? The answers to that are various and not within the limits of this article, but we do know that it is not at all unusual for recruits to desert en route from recruiting stations to this depot, and also after their arrival here. A man may have a fraction of a dioptré of myopia, and one dioptré and even more of hyperopia, and be able to read the test card with facility, and this has frequently been illustrated here. When one considers the amplitude of accommodation in a young man's eye this as regards hyperopia can readily be understood. In using the shadow test it is essential not to forget to test the refraction in both meridians of the eye otherwise wrong conclusions may be arrived at and the recruit done an injustice. Judging from my experience at this depot, I am of the opinion that no soldier claiming defective vision should be discharged on surgeon's certificate of disability unless his vision has been tested by a medical officer experienced in the objective methods mentioned, and if he is not, the case should be sent to the nearest post where such a medical officer is stationed.

By means of the skiascopic eye one can acquire all the skill in every detail of this test without incommoding a soldier used simply as practice material, or cause his being excused from duty. In the majority of cases no mydriatic will be necessary, after one has acquired a certain amount of skill, as the pupil in a darkened room is large enough. The shadow test is also of great assistance in correcting errors of refraction, though the lens of reversal is not always the appropriate glass, as it tends to over-correct especially in hyperopia. Theoretically in the shadow test, the correcting lens should at the point of reversal banish all shadow, but in practice as near as we can get is the weakest glass that will reverse the shadow.

Efforts to secure discharges by malingering as regards defects of vision have practically ceased at this post, while formerly they were surprisingly numerous, and any medical officer will feel fully repaid for every moment spent in acquiring proficiency in

the shadow test, certainly if he is in charge of the medical department of a recruiting depot. One fact should be borne in mind, and that is a man may be a malingerer even with a considerable error of refraction, provided it is hyperopia. A recruit recently had his vision tested on his arrival at the receiving barracks and claimed he could read the 20-foot test card with his right eye only at 12 feet and his left eye at 14 feet. The shadow test showed hyperopia, right eye, 2.50 and left eye 1.75, but on testing his vision with the 20-foot card at 20 feet, he read it with facility with each eye, though he had not seen this card before. His power of accommodation had overcome the hyperopia, and in the meantime he had changed his mind about wanting his discharge.

WOUNDS PRODUCED BY JAPANESE PROJECTILES.

BASING his article on personal observation, Seldowicz, in the *Wratschnebnaja Gaseta*, begins by deploring the many failures of the Russian army transportation service. He says that after the bloodiest battles it happened that a few but privileged wounded would be transported in a comfortable fashion, particularly well cared for and fed; while the immense majority of wounded were moved in rough wagons, with little or no protection from the weather, without food, and in many instances without the least attempt at bandaging their wounds. Seldowicz speaks in particular of his observation of 164 wounds. The projectiles of the Japanese artillery were the least humane. The head, the thoracic and the abdominal wounds were generally quickly fatal, either on the field of battle or at the dressing station. The Japanese shrapnel also usually produced mortal wounds; for example, in the cases of sixteen lesions of the head by rifle bullets, there were only six deaths; but in four men wounded in the head by shrapnel, all died. He concludes that as artillery duels tend more and more to predominate in modern war, the wounds caused by large projectiles will increase in number and, above all, in severity over the humane rifle bullet wounds.—C. S. BUTLER.

EAR AFFECTIONS AND MILITARY SERVICE.

By EMIL AMBERG, M.D.,

DETROIT, MICHIGAN.

IN order to learn what importance is attached to the influence of affections of the hearing organ in connection with the military service, I addressed the respective departments of Austria, France, Germany, Great Britain, Italy and the United States, and I take this occasion to thank the War offices of the various governments for their prompt and valuable answers which I have received from them.

The following are some of the regulations:

I. THE UNITED STATES OF AMERICA.

“The following in reference to the ears are disqualifications for service in the army of the United States: Deafness of one ear or both ears; all catarrhal and purulent forms of acute and chronic otitis media, polypi and other growths or diseases of the tympanum, labyrinth, or mastoid cells; perforation of the tympanum; closure of the auditory canal, partial or complete, except from acute abscess or furuncle; malformation or loss of the external ear and all diseases thereof, except those which are slight and non-progressive.”

II. GREAT BRITAIN.

“I am directed to acknowledge receipt of your letter dated 27th May, 1905, relative to the admission to the Army of men suffering from ear disease, and in reply I beg to inform you that in the case of all recruits the medical examiner must satisfy himself that the hearing is good, and the regulations require examination of the ears. The diseases and conditions which would entail rejection are not specifically mentioned, as that is considered to be a matter best left to the examiner's judgement.”

III. AUSTRIA.

No.	IN THE ORGAN OF HEARING.			
	REGISTER A.	REGISTER B.	REGISTER C.	REGISTER D.
	Afflictions which do not annul complete fitness for military service if otherwise bodily fit.	Afflictions which admit to the supply reserve as "partially fit."	Afflictions which unfit for service with arms.	Afflictions which disqualify for any service.
8.	Decrease of the hearing power in both ears to a hearing distance of (6) meters.*	Hardness of hearing in both ears with a hearing distance down to (3) meters.*	Hardness of hearing in both ears with a hearing distance under (3) meters.	Deafness in both ears.
9.	Decrease of the hearing power in one ear to a hearing distance of (3) meters, if the hearing in the other ear is normal.	Hardness of hearing in one ear with a hearing distance down to (1) meter if the hearing is good in the other ear.	Hardness of hearing in one ear with a hearing distance under (1) meter	
10.		Total loss of one auricle.		
11.			Congenital or acquired total occlusion of the other ear canal even only in one ear.	
12.			Lasting perforation of the drum membrane regardless whether the underlying disease is still present or has ceased to exist.	
13.			All forms of chronic suppurations of the middle ear with their complications.	

* (Page 19.) Hearing tests for speech must be made in a closed room which must be as quiet as possible. The accentuated whispering voice (distinctly pronounced) must be used. It must be of such intensity that single words can be distinctly understood in the open air and repeated by a normal ear to a distance of 2 meters provided that the air is moderately in motion and that the surroundings are quiet. This corresponds to an average normal hearing distance of 22 meters for the accentuated whispering voice in a closed room, etc.

IV. FRANCE.

(62) The acute ear affections can cause a postponement of the examination toward the end of the session of the revision council, on account of their uncertain termination.

The chronic and obstinate affections of the outer ear canal with propagation to the drum membrane are causes for exemption as well as the chronic affections of the middle ear with or without purulent discharge and with or without perforation of the drum membrane. The perforation of the drum membrane without otorrhea is compatible with the auxiliary service.

The chronic affections of the outer and middle ear may cause the temporary discharge if they appear susceptible to subsequent improvement.

(63) The chronic suppuration of the mastoid cells necessitates exemption. The acute inflammation of the same cells as well as the superficial mastoid phlegmon may get well rapidly and should postpone a decision until a later date.

The chronic mastoiditis after failure of an appropriate treatment, will cause temporary discharge.

(59) The congenital or traumatic atresia, the complete obliteration and the deviation of the ear canal can cause exemption or classification in the auxiliary service, depending upon the circumstance whether hearing is entirely abolished or only diminished. Partial discharge is pronounced when the atresia or the traumatic obliteration of the outer ear canals is followed by loss of hearing.

(60) Polyps of the ear canal are always cause for exemption. They are cause for temporary or final partial discharge, according to the degree of gravity or curability of the middle ear affection of which they generally are the result.

(61) Foreign bodies are cause for exemption only when their extraction would appear dangerous or if they would cause grave disorders.

(64) Inner ear affections which cause pronounced deafness are cause for exemption or partial discharge.

In regard to deafness a detailed classification is employed, for which I refer to the original.

V. GERMANY.

No.	ANNEX 1A TO PAR. 4.	No.	ANNEX 1B TO PAR. 7.	No.	ANNEX 1C TO PAR. 8.	No.	ANNEX 1D TO PAR. 9.	No.	ANNEX 1E TO PAR. 9.
	Insignificant bodily defects which do not exclude the fitness to serve with arms.		Bodily defects and afflictions which exclude fitness for active service with arms, which permit, however, active service without arms or service in the supply reserve.		Diseases or afflictions which unfit temporarily, which, however, can be improved to such a degree that complete or in complete fitness results. [See annex (1A) or annex (1B).]		Diseases and afflictions which prevent service in the standing army and in the supply reserve and in general, also for the landsturm.		Diseases and afflictions which disqualify for service in the standing army and in the supply reserve and in general, also for the landsturm.
31	Slight decrease of hearing power* in one ear.	31	Slight continued decrease of the hearing power* in both ears, or grave decrease of the hearing power in one ear if the other ear is good.	31	Diseases of the ear.	31	Grave decrease of hearing† or deafness in one ear if the use of the other is interfered with.	31	Grave continuous decrease of the hearing power*** or deafness in both ears.
				32		32	Important chronic afflictions of one ear (e.g.) chronic middle ear suppuration sclerositis.	32	Incurable grave diseases of one ear.

*Hereby is understood a degree of decrease of the hearing power which reaches from (4) Meters downward to not less than (1) Meter.

†Hereby is understood a degree of decrease of hearing power from (1) Meter downward.

‡Hereby is understood a decrease of the hearing power from (1) Meter downward.

VI. ITALY.

Class I. Easily recognizable infirmities which are a cause for rejection from military service by means of a simple statement signed by the consular authorities.

Art. 13. The total absence of the auricle.

Class II. Infirmities which may give rise to rejection from military service by means of a medical declaration in the first examination to which the conscript is subjected.

Art. 55. All the lesions of the external ear when producing a striking deformity.

In class IV, infirmities which may give rise to rejection from military service, only after an observation in a colonial hospital are mentioned.

Art. 117. Chronic purulent otitis, when originating from caries of the bones or from some other cause difficult to remove.

Art. 118. Deafness and a notable diminution of hearing in both ears.

COMMENTS.

We see that nowadays a middle ear suppuration exempts from active service with arms. It is of great interest to learn that a distinctly different view existed in the year 1776, which enabled a military surgeon to render a great service to medical science.

The Prussian surgeon Jasser of the von Lengefeldschen regiment unacquainted with the achievements of the great French surgeon, Jean Louis Petit, who repeatedly performed the mastoid operation, furnishes us with an elaborate description under the title "The Fifth Remark" (7) when after a healed affliction the patient had an earache with a constant discharge of pus from the ear, and at last lost his hearing. The complete history which seems to be little known, has been translated by the writer and appeared in the December, 1904, issue of the *Michigan State Medical Journal*.

In his paper Jasser states: "I examined his ears [speaking of a recruit] and found very offensive pus coming from the same. The commander of the regiment, who was present at this inspec-

tion, lifted his cane and assured the recruit that this was the true remedy to restore his lost hearing and to bring the pus from his ear.

"In view of the fact that this new remedy was suggested, I could not think of declaring the patient an invalid. He received his uniform and was obliged to start to practice. After three weeks this man was brought to me to the hospital. He had high fever and complained of severe pain in his right ear."

Then follows a very detailed account of the fruitless employment of peaceful means, of the accidental perforation of the cell structure of the mastoid process by a probe, and of the remarkably good result obtained thereby.

This good result encouraged Jasser to open the mastoid on the other side in order to restore the lost hearing, which was also done, as he reports, with good result.

In 1776 a very severe middle ear suppuration did not exempt from military service with arms, contrary to the view held today.

At our time we notice a more enlightened consideration of the importance of a suppurative ear affection. The question might be asked whether any government would be justified to demand that recruits or soldiers suffering from a mild ear suppuration must submit to a capital surgical procedure with the intention of making them fit for military service. The writer is of the opinion that, in spite of the great progress in surgical otology, such a course is not justified, for the following reasons:

1. Anatomical anomalies of the temporal bone may make an otherwise simple capital operation a difficult one.
2. We are unable to recognize beforehand with certainty the extent of an ear suppuration.
3. The technique of a capital operation on the middle ear and adjacent parts is difficult and not easily acquired.
4. A definite promise in regard to the change in hearing cannot be made to the patient.
5. Any capital operation is not entirely free from all danger.

The fact that a suppurating ear is practically always more dangerous than an operation cannot justify a compulsory surgical interference.

In conclusion I beg to state that the regulations for admis-

sion of recruits suffering from ear affections are not uniform in the countries mentioned. The differences may be explained by the relation of the size of the armies to the population and by the degree of importance attached to the various ear affections.

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4. Bulletin Officiel du Ministère de la Guerre. Instruction du 31 Janvier 1902. Sur l' Aptitude Physique au Service Militaire.
5. Communication from the German War Department, dated June 23 1905.
6. A list of the physical infirmities or imperfections sufficient to exonerate conscripts residing abroad from military service. Rome, 1902.
7. Schmucker, Various Surgical Contributions, Vol. III, pages 113 and following,

RED CROSS SOCIETY OF JAPAN AND THE LATE WAR.

THE Red Cross Society of Japan, says the *Sei-I-Kwai Medical Journal*, in the late Russo-Japanese War, employed the following persons:—

“Directors, 5; Chief Surgeons, 6; Surgeons, 347; Pharmacutists, 168; Clerks, 191; Assistant Pharmacutists, 6; Chief Female Nurses, 239; Chief Male Nurses, 110; Chief Stretcher-bearers, 3; Female Nurses, 2,026; Male Nurses, 643; Stretcher-bearers, 144; Temporarily Employed Chief Female Nurses, 9; Temporarily Employed Chief Male Nurses, 2, Temporarily Employed Female Nurses, 607; Temporarily Employed Male Nurses, 472, making up 4,978 persons in all.

“The Society has already spent 516,000 *yen* for its works until the end of last September, having exhausted the greater portion of its capital fund, and moreover it must pay 10,000 *yen* more to reward the merit of members engaged in the late war.”

Contemporary Comment.

THE PREPARATION OF THE JAPANESE MEDICAL OFFICER.

THE preliminary training of the medical officer of the Japanese services begins, according to a work entitled "Our Fatherland Japan," at an early age, admission to an elementary school occurring at the age of not less than seven, where the Japanese language, arithmetic, gymnastics, etc., are taught, followed by history, natural sciences and drawing, the course requiring six years. He then enters an intermediate school where he is instructed in geography, mathematics, natural history, physics, chemistry, jurisprudence and economics during a period of five years. At this time, having arrived at the age of eighteen or more, his future avocation is determined upon, and he is passed into a high school where he pursues the study of foreign languages, two of which are required for admission to the university. In case of a medical student, particular attention is paid to German, to which forty per cent of the time is devoted, French or English being added as a second subject, the remainder of his time being occupied with Latin, mathematics, physics, chemistry, zoology, botany and gymnastics. The high school course consumes three years. He then passes to the university at Tokyo where the medical department is situated. This course requires four years, upon the conclusion of each of which an examination takes place with a final examination at the close. At the conclusion then of eighteen years of study he is prepared to enter upon the practice of medicine and if he began his work at the minimum of seven years he is twenty-five years of age. The University Medical School is distinctly German in its aspect, nearly half of the faculty being of that nationality. The medical student body itself is small, there having been only 334 graduates

in the decade 1890-1900. The clinical instruction afforded appears to be rather limited, which accounts for the relatively large number of Japanese physicians who take a post-graduate course abroad.

It must be understood, however, that all Japanese practitioners do not take this training, the majority of them, after passing through the elementary and middle schools, entering a medical school, of which there are five in the Empire.

There is in Tokyo an Army Medical School for twenty students and a Naval Medical School for twenty-eight, many of the students in which are graduates of the University Medical Department, but the larger number of whom come from the other medical schools.

THE TREATMENT OF PENETRATING WOUNDS OF THE ABDOMEN.

IN penetrating wounds of the abdomen, says Professor Malcolm L. Harris of Chicago, (*Annals of Surgery*), there are absolutely no known symptoms which indicate injury to any of the viscera, except those observed in connection with the urinary tract, stomach and occasionally the lower bowel. Except those relating to general shock, all symptoms following such wounds indicate either internal hæmorrhage or peritonitis. To wait for symptoms of perforation of the intestine means to wait until peritonitis has developed; therefore every bullet or stab wound which penetrates the abdominal cavity should be operated on at the earliest possible moment in order to anticipate the advent of peritonitis. No time should be wasted in attempting to demonstrate the presence or absence of intestinal perforation by such means as the rectal insufflation of gases or vapors, or the analysis of re-collected intraperitoneally injected air or liquids. It is essential to systematically examine the entire gastro-intestinal canal in all cases, regardless of the point of entrance of the wounding body.

Medico-Military Index.

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Editorial Expression.

THE STORY OF THE RUSSIAN SIDE.



WE are happy to announce that Colonel Roman Romanovitch de Wreden, who was Chief Surgeon of the Russian forces in Manchuria, will contribute a number of articles upon field surgery and field sanitary service to the JOURNAL during the coming year. The first paper will be published in our next number and will consist of a consideration of the gunshot wounds inflicted with the Japanese small caliber mantle bullet. Dr. de Wreden was a delegate to the Boston meeting of the Association and is remembered with much pleasure by those who made his acquaintance there.

Much has been written upon the work of the Japanese army and navy medical departments but little has appeared concerning the sanitary work of her opponent. The very authoritative statements to be presented by Dr. Wreden will then carry especial weight and receive an especially respectful hearing. The lessons of the late war are not by any means all apparent at this date, and it will require much sifting, winnowing, and comparing before complete and correct conclusions can be reached. The original papers presented in the JOURNAL OF THE MILITARY SURGEONS

promise to be perhaps the most important body of facts upon which military and naval medicine and surgery will depend for the deductions of the future.

FIRST AID DOGS.

IN connection with the note upon first aid dogs in the last number of the JOURNAL, it is interesting to know that Major Hautonville Richardson, formerly of the 45th Sherwood Foresters, has been appointed to the Royal Army Medical Corps Volunteers for the purpose of giving instruction to the London companies in the use of first aid dogs in war. This is the first official step taken by the British Army in this direction. Major Richardson, we learn from the *United Service Gazette*, has devoted nine or ten years to this very practical branch of military medical work, although it is only lately that he has been enabled to secure official recognition. Last year his dogs were used both in regular and volunteer camps and in the summer maneuvers; the year previously a similar unofficial test was made; and on every occasion the sagacity and training of his dogs created a most favorable impression of their potentiality for ambulance work.

The *United Service Gazette* goes on to remark that Germany was the first country to recognize the possibilities of the trained dogs in field ambulance work, the attention of Major Richardson indeed having been attracted to the subject by chancing to meet, in Perthshire, a German agent who was purchasing shepherds' collies in order to utilize them in the German service. It is not alone as an aid to ambulance work that the dog may be usefully employed in warfare. The French utilized dogs in the expedition against the Kabyle tribes of Tunis, and freely admit that they were on frequent occasions saved from many perilous ambushes, which had been laid for them, and into which they would have fallen but for the sagacity of their dogs. This is not an isolated instance, for the trained dog is of the highest service as a scout, and if employed with an outpost he adds very much to its importance. During actual operations he may be of the greatest

possible advantage in conveying ammunition to those engaged on the firing line; while in the capacity of a sentinel he would, in the case of a siege or investment, prove an infallible safeguard against surprise.

But his greatest sphere of usefulness is of course in the field of first aid. During the Russo-Turkish War, dogs were in constant use by the forces of the Crescent, so that General Skobelloff frequently found himself hampered and placed at a disadvantage through the instrumentality of the enemy's canine allies. He was so impressed by their usefulness that he decided to take a leaf out of his adversary's book and arrange for the training of a number of dogs for his own troops. At the outbreak of the war with Japan, the Russian Dog Breeders' Association undertook to introduce the canine element into the Russian Ambulance Corps, and, after an ineffectual attempt to purchase suitable animals in Germany, were fortunate enough to secure from the Kaiser himself a gift of three Scotch sheep-dogs, which had been carefully and efficiently trained in ambulance work; these were at once despatched to Manchuria. The Association then itself entered upon the work of training dogs for ambulance service. Austria, Holland, Italy, Spain and Sweden have made satisfactory advances also in this direction.

Major Richardson considers that the type of dog best adapted for training for military service is the black or sable collie,—not the long muzzled and narrow faced breed we are accustomed to see at the dog shows, but the ordinary Scotch collie used by the farmer and shepherd; in the main, however, he puts intelligence before breed. The Germans also favor the use of collies, but the French employ the dogs used by smugglers on her frontiers; Austria has adopted the Dalmatian breed; Russia has selected the Caucasian dog; while Turkey has fixed on the Asiatic sheep-dog as the most suitable for training.

The methods of training are much alike in all countries. The animal first learns to follow his master and give warning of the approach of a stranger by growling. At night it is conveyed to a quiet spot by its trainer, and after a time an assistant endeavors to approach in the most cautious manner possible, the

dog being taught to give warning and at the same time to check his bark at the behest of the trainer. The animal is then taught to run to an assistant, who is at first in sight, and later in the course of instruction, is hidden at progressively increasing distances, the teaching being but an amplification of the game of hide and seek which such dogs are so fond of playing with children. The application of this part of the training to the scenting out and locating of wounded on a battlefield is the simplest possible matter. In addition to the restoratives and dressings which the dogs carry, they also are provided with a pencil and paper which a disabled man may use in scribbling directions as to where he may be found and what he needs, the dog having been taught that upon the return of the pencil and paper to his wallet he is to go back to his master. If the man is incapable of self help the dog understands that he is to call help by barking, remaining with the patient if assistance is near at hand and going for it if it be not within call.

All of this is so similar to the inherited tendencies possessed by the sheep dogs, who for centuries have been following and leading their flocks, that its utilization in searching for the wounded is a very simple matter. The usefulness of this element in military medical service indeed is so evident that much value may be anticipated from the continuation of the work inaugurated in the British service by Major Richardson, whose dogs participated most creditably in a practice drill on Wimbledon Common the evening of March 3rd, where a battle was supposed to have been fought during the day, and where dogs were used in searching for the wounded lying without the reach of electric search lights which had been provided by the Electrical Royal Engineers Volunteers. Major Richardson was himself in the searching line and personally supervised the work of his dogs, who located the wounded with great promptness and precision. It is suggested that the training of a kennel for first aid might, with material advantage, be added to the work of the American army hospital corps companies of instruction.

News of the Services.

Lieutenant Colonel Daniel M. Appel, U.S.A., ordered home from the Philippines.

A. A. Surgeon C. A. Bailey, P.H.&M.H.S., granted one month's leave.

Dr. Edward Bailey, U.S.A., granted four months leave.

P. A. Surgeon M. W. Baker, U.S.N., ordered from the Washington Naval Hospital to the New York Naval Hospital.

Surgeon F. L. Benton, U.S.N., ordered from the Brooklyn Naval Hospital to the Pensacola Naval Hospital.

Captain William N. Bispham, U.S.A., ordered from Fort Logan to temporary duty at Fort D. A. Russell.

Dr. Arthur I. Boyer, U.S.A., ordered from Kingsbridge, N. J., to Fort Jay to accompany troops to the Philippines.

Dr. Isaac W. Brewer, U.S.A., ordered from Fort Apache to Fort Huachuca.

A. A. Surgeon J. T. Bullard, P.H.&M.H.S., granted one month's leave.

P. A. Surgeon J. T. Burkhalter, P.H.&M.H.S., ordered from Brunswick Quarantine to Ellis Island, N. Y.

Dr. Caspar R. Byars, U.S.A., rejoined at Fort Sam Houston from leave.

A. A. Surgeon F. D. Chapplear, U.S.N., appointed February 28, 1906, and ordered to the Washington Naval Hospital.

Captain J. B. Clayton, U.S.A., granted two months leave upon being relieved from duty at the Fort Leavenworth Military Prison.

P. A. Surgeon L. E. Cofer, P.H.&M.H.S., granted one month's leave.

Assistant Surgeon I. F. Cone, U.S.N., appointed with the rank of Lieutenant (j. g.), from February 28, 1906.

Dr. William H. Cook, U.S.A., ordered from Gravesend, N. Y. to Fort Niagara to accompany troops to the Philippines.

P. A. Surgeon H. S. Cumming, P.H.&M.H.S., ordered from San Francisco Quarantine Station to Yokohama, Japan.

P. A. Surgeon D. H. Currie, P.H.&M.H.S., granted three weeks leave instead of two months.

Lieutenant Colonel W. B. Davis, U.S.A., relieved from duty as Chief Surgeon Department of the Columbia and ordered to temporary duty at the New York Medical Supply Depot.

Lieutenant William T. Davis, U.S.A., assigned to duty with Hospital Corps Company A at Washington Barracks.

Surgeon J. B. Dennis, U.S.N., ordered from the Pensacola Naval Hospital to the Indian Head Naval Proving Grounds.

Lieutenant Wallace De Witt, U.S.A., ordered before the Manila Promotion Board.

P. A Surgeon H. A. Dunn, U.S.N., ordered from Indian Head Proving Grounds to the *Princeton*.

Dr. Albert H. Eber, U.S.A., sailed from San Francisco for the Philippines.

Major Rudolph G. Ebert, U.S.A., appointed member of a Promotion Board at Manila.

Major Peter R. Egan, U.S.A., ordered for examination by a Retiring Board.

Dr. William J. Enders, U.S.A., left Fort Morgan on one month and ten days leave.

Dr. John M. Feeney, U.S.A., ordered from Fort Trumbull to Fort Terry.

Surgeon J. G. Field, U.S.N., ordered to the Bureau of Medicine and Surgery.

Lieutenant Peter C. Field, U.S.A., ordered before the Manila Promotion Board.

Assistant Surgeon J. Flint, U.S.N., appointed with the rank of Lieutenant (j. g.), from February 28, 1906.

Lieutenant George H. R. Gosman, U.S.A., ordered before the Manila Promotion Board.

Lieutenant R. B. Grubbs, U.S.A., ordered before the Manila Promotion Board.

Lieutenant Samuel C. Gurney, Mich. N.G., of Detroit, was the recipient of a handsome saber from the officers of the First Battalion of the First Michigan Infantry, on the 28th ult., a memento of his Michigan service tendered because of his early departure for the Philippines.

Major H. M. Hallock, U.S.A., granted one month's extension of sick leave.

Lieutenant Haywood S. Hansell, U.S.A., ordered from the Philippines to San Francisco.

Captain John B. Huggins, U.S.A., assigned to duty in the Medical Transport Service, San Francisco, Cal.

Major William McC. Johnston, after twenty-five years service as Surgeon of the 14th N.G.P., has been retired from active service at his own request, to date from November 20, 1905. Major Johnston has been warden of the Western Penitentiary at Allegheny since 1901.

Major Jefferson R. Kean, U.S.A., upon the recommendation of the Surgeon General of the Army, has been appointed to represent the service as a member of the Central Committee of the American National Red Cross.

Major Frank R. Keefer, U.S.A., assigned to duty at the Presidio of Monterey and granted one month's leave.

Major Charles F. Kieffer, U.S.A., granted one month's sick leave.

Captain R. M. Kirby-Smith, U.S.A., promoted from First Lieutenant, February 28, 1906.

Captain Thomas J. Kirkpatrick, U.S.A., reported for treatment at Washington General Hospital and granted thirty days leave.

Dr. Fred T. Koyle, U.S.A., ordered from Fort Ringgold to Fort Bliss.

A. A. Surgeon W. E. Kurtz, P.H.&M.H.S., granted one month's leave.

Major Louis A. La Garde, U.S.A., appointed member of a Promotion Board at Manila.

Surgeon C. D. Langhorne, U.S.N., ordered from the *Denver* home to await orders.

Dr. Stephen M. Long, U.S.A., granted one month's leave.

Surgeon G. P. Lumsden, U.S.N., ordered from the *Olympia* to the *Minneapolis*.

Lieutenant P. H. McAndrew, U.S.A., ordered before the Manila Promotion Board.

Dr. Francis M. McCallum, U.S.A., granted one month's leave.

Major W. D. McCaw, U.S.A., granted extension of leave.

Assistant Surgeon W. N. McDonell, U.S.N., ordered from the *Celtic* to the *Yankton*.

Dr. Clemens W. McMillan, U.S.A., ordered from Fort Terry to Fort Trumbull.

Dr. Fred S. Macy, U.S.A., arrived at Fort Adams.

Surgeon G. M. Magruder, P.H.&M.H.S., ordered to Portland, Oreg., for duty.

Assistant Surgeon J. D. Manchester, U.S.N., ordered from the *Princeton* home to await orders.

Colonel H. Mareschal, well known to the Association of Military Surgeons from having twice represented his nation at the annual meetings of the organization, publishes in the February number of the *Archives de Medecine et de Pharmacie Militaires* an interesting article on the military medical service of the United States.

P. A. Surgeon Dunlop Moore, P.H.&M.H.S., ordered from Yokohama, Japan, to Honolulu, Hawaii.

Surgeon F. S. Nash, U.S.N., ordered from the *Oregon* to the *Rainbow*.

Surgeon O. D. Norton, U.S.N., ordered from the *Minneapolis* home to await orders.

P. A. Surgeon J. A. Nydegger, P.H.&M.H.S., ordered to Perth Amboy, N. J., for special temporary duty and returned to Stapleton, N. Y.

P. A. Surgeon J. H. Oakley, P.H.&M.H.S., granted one month's leave.

Captain Henry Page, U.S.A., ordered to the Fort Leavenworth Military Prison.

Dr. Wallace E. Parkman, U.S.A., rejoined at Fort Assinniboine from leave.

Dr. Luke B. Peck, U.S.A., returned to Fort Andrews from leave.

Assistant Surgeon General W. J. Pettus, P.H.&M.H.S., granted one month's leave.

P. A. Surgeon R. W. Plummer, U.S.N., ordered from the Kansas City Naval Recruiting Station to the St. Joseph Naval Substation and thence to the *Denver*.

Assistant Surgeon F. E. Porter, U.S.N., ordered from the New York Naval Hospital to the *Rhode Island*.

Major William E. Purviance, U.S.A., appointed member of a Promotion Board at Manila.

Lieutenant Will L. Pyles, U.S.A., ordered to accompany recruits to the Presidio of San Francisco.

Dr. James Reagles, U.S.A., returned from Fort Yellowstone to Fort Keogh.

Dr. M. A. Rebert, U.S.A., returned to Fort Totten from temporary duty at Fort Schuyler.

Dr William H. Richardson, U.S.A., returned to Fort Sheridan from leave.

P. A Surgeon M. J. Rosenau, P.H.&M.H.S., detailed to attend meeting of the Committee of American Bacteriologists in New York, relative to the standardization of tetanus antitoxic sera.

Captain E. L. Ruffner, U.S.A., ordered to accompany recruits to Fort Worden, Wash.

Baron Yasuzumi Saneyoshi, the distinguished Director General of the Medical Department of the Japanese Navy during the Chino-Japanese and Russo-Japanese Wars, was retired from active service on December 13, 1905. and appointed a member of the Japanese House of Peers.

A. A. Surgeon L. H. Schwerin, U.S.N., ordered to the *Celtic*.

Dr. James R. Scott, of Appleton, has been nominated as Assistant Surgeon in the Wis. N. G., for service with the 2nd Regiment.

Lieutenant Herbert G. Shaw, U.S.A., ordered before the Manila Promotion Board, and from the Philippines to San Francisco.

Dr. James E. Shellenberger, U.S.A., ordered from Fort Brown to Fort Ringgold.

Captain M. A. W. Shockley, U.S.A., ordered from the Philippines to San Francisco.

Captain Jay R. Shook, U.S.A., promoted from Lieutenant, March 6, 1906.

Lieutenant E. D. Shortlidge, U.S.A., ordered before the Manila Promotion Board.

Assistant Surgeon W. B. Smith, U.S.N., ordered from the *Olympia* to the *Hancock*.

Assistant Surgeon R. D. Spratt, P.H.&M.H.S., ordered from Mobile Ala. to Brunswick Quarantine.

Lieutenant Samuel L. Steer, U.S.A., ordered to accompany troops from Fort Assinniboine to the Presidio of San Francisco and return.

Major William Stephenson, U.S.A., granted one month's leave.

Dr. Harrison W. Stuckey, U.S.A., returned from Fort Assinniboine to Fort Snelling.

General Marshall O. Terry, formerly Surgeon General of New York, was married on the 12th of December to Mrs. A. N. McGregor of Mamaronck, N. Y. and Fort Myers, Fla.

Lieutenant R. M. Thornburgh, U.S.A., ordered before the Manila Promotion Board.

Dr. Charles W. Thorp, U.S. A., returned to Fort Ethan Allen from sick leave.

Lieutenant Colonel George H. Torney, U.S.A., ordered, in addition to his present duties, to take up those of Chief Surgeon of the Department of California and Medical Superintendent of the Army Transport Service at San Francisco.

A. A. Surgeon F. W. Tyree, U.S.N., ordered from the San Francisco Naval Training Station to the Kansas City Naval Recruiting Station.

Lieutenant James W. Van Dusen, U.S.A., ordered before the Manila Promotion Board.

Lieutenant G. McD. Van Poole, U.S.A., ordered before the Manila Promotion Board.

Captain William E. Vose, U.S.A., promoted from Lieutenant, March 6, 1906.

Major Philip G. Wales, U.S.A., ordered home from the Philippines, July 1, 1905.

Dr. Francis M. Wall, U.S.A., returned to Fort Oglethorpe from leave.

Captain James P. Warbasse, N.G.N.Y., has been elected editor of the New York State Journal of Medicine.

Dr. Clark I. Wertenbaker, U.S.A., returned to Madison Barracks from leave.

Lieutenant Eugene R. Whitmore, U.S.A., ordered from Fort Jay to Fort Warren.

Dr. Walter Whitney, U.S.A., ordered to accompany troops from Columbus Barracks to San Francisco.

Medical Director John C. Wise, U.S.N., has been designated as delegate from the United States Navy to the XV International Medical Congress and will sail for Lisbon on April 7.

Captain Edwin P. Wolfe, U.S.A., ordered from the Philippines to San Francisco.

Captain Frank T. Woodbury, U.S.A., promoted from Lieutenant, March 6, 1906.

Major R. S. Woodson, U.S.A., ordered to accompany troops from the Presidio of San Francisco to Fort Slocum and to return.

A MEDICAL DEPARTMENT FOR THE VIRGINIA VOLUNTEERS.—A bill was introduced in the Virginia House of Delegates on February 24th providing for the organization of a Medical Department of the Virginia Volunteers, consisting of a Medical Corps, a Hospital Corps and such trained nurses and other employees as may be allowed by law. The Medical Corps is to consist of a Chief Surgeon (Colonel) for each organized division, a Brigade Surgeon (Lieutenant Colonel) for each organized brigade or the number of troops essential therefor, and the necessary number of Surgeons and Assistant Surgeons (Majors, Captains and Lieutenants) as needed to provide suitable medical service.

THE SURGEON GENERAL OF THE PRUSSIAN ARMY.—In connection with the succession of Prof. Schjerning to the late Dr. von Leuthold as Surgeon General of the Prussian Army, the *Deutsche Medizinische Wochenschrift* informs us that the new officer will have direct access to the Kaiser, reporting to him in person every three weeks,—a privilege not officially granted to any of his predecessors, although Surgeon General von Leuthold as Physician-in-Ordinary possessed that right.

THE DISCUSSION IN THE SENATE ON THE ARMY MEDICAL REORGANIZATION BILL.—On Tuesday, March 6th, the Senate took up the Army Medical Bill and the following debate ensued:

Mr. Hale. It is a thankless task, after a committee has reported a bill, to oppose it and ask the intervention of the Senate; but it is so grave a situation that I have felt that this project, which is a part of the general staff plan for increasing the Army, should be understood by the Senate before it passes the bill.

I find, Mr. President, that by the act approved February 2, 1901—five years ago—entitled "An act to increase the efficiency of the present military establishment of the United States," the different corps of the Army, and particularly the medical corps, were taken into consideration; and five years ago Congress fixed the limit of the medical corps. It cut it down, but fixed the limit in the act to increase the efficiency of the Army. * * *

Mr. Warren. The present law was not satisfactory to the medical department of the time it passed nor to members of the military committee which had the matter under consideration; but was the result, as is the case with many other laws, of a compromise and getting only a part of what was necessary, as experience has proven. There are over 170 contract surgeons constantly employed in order to take care of the Army now, in time of peace.

Mr. Hale. The Senator has anticipated what to me is one of the most objectionable features of this bill. We have provided for the military establishment heretofore and for the medical department by a flexible, ad-

justable and temporary force of contract surgeons. In any emergency under the present act the head of the department, the President primarily or the head of the medical corps, can employ more or less contract surgeons. That, as I have said, was intended to be a temporary force, a flexible force, that could be lessened or increased at any time. It is a force that is not borne on the rolls of the Army as a permanent force, and this bill, under the claim of decreasing the number of contract surgeons, has included them all in the provision for additional captains and lieutenants.

Mr. Warren. Mr. President, of course the Senator does not mean that. The bill does not so provide.

Mr. Hale. I take it the purpose of the bill is to decrease the number of contract surgeons, but, instead of that, it increases the rank of the medical officers of the Army.

Mr. Warren. It decreases the expense by \$200 a year in the case of each one of the younger surgeons who takes the place of a contract surgeon. When the bill passes, if it does, there will still be in time of war or in case of a sudden call an opportunity and a necessity to employ contract surgeons or those from the reserve force, but the bill is based upon the theory that it is a bad practice in time of peace, when we have a minimum force, to rely so largely upon contract surgeons. The bill provides that nearly the number of surgeons that will be necessary shall be continuously employed, and the expense, as I said before, is lessened at one end of the line and increased at the other; but the total expense of the medical corps is not increased at the present time, and will not be largely increased when four years from now, if the bill passes, the maximum number of surgeons may be reached.

Mr. Hale. The serious fault with this is that it disposes of the contract surgeons, who can be reduced at any time we pass the bill providing for the Army. Instead of that it is proposed to add these officers to the regular establishment, who are a part of the Army and who receive retired pay. I do not find that the committee have taken any account of that. The contract surgeon is only a temporary appointment and employment. He is not on the Army rolls with retired pay when he arrives at a certain age; but the substitution, which the Senator says does not increase the expense, utterly ignores the fact that when the military establishment is increased, instead of the contract surgeon it is burdened—or not to use the word “burdened”—there is added a corps of officers who have the retired pay, and the increase in years to come, instead of, as the Senator says, being only a few thousand dollars, will be hundreds of thousands of dollars, and what was a good feature in the law which we passed only five years ago of an adjustable force of contract surgeons, which may be a hundred at one time or 150 at another time, is removed, destroyed, and a permanent force is substituted which has every privilege of the rank of officers in the Navy and receive the retired pay. That in itself, Mr. President, ought to give the Senate pause before it passes such a bill.

In looking up the matter I have had occasion to read the debates in another body, and they are very illuminating about the retired list. We have retired more brigadier generals in the Army in the last three years than we ever before retired after the immense, colossal wars we have been engaged in; and I do not want to see the retired list increased anywhere. I do not object to the officers of the Army and the Navy in reasonable numbers, the size of the establishment being fixed in a conservative fashion, having the benefit of retired pay. It is a very great inducement to military service in both the Army and the Navy that at the age of sixty-two or sixty-four, as the case may be, instead of a man being thrown out to take his chances as he does in the vocations of peace, he is retired with three-quarters of the pay he has been drawing as an active officer. I do not object to that. That is a part of the military system, and a fitting part. But it is a curious development of the present situation that we are today retiring officers both of the Army and the Navy, at a more rapid rate than we did after the great wars we have been engaged in. The list of retired naval officers—retired admirals and rear admirals—has got to be something enormous. If the debate continues another day, or is not ended now, I may present a list I have of the number of major generals and brigadier generals already on the retired list which this bill proposes to increase; and it is something startling. The number of brigadier generals and major generals—I have not the figures here now—

Mr. Spooner. I should like to ask a question. What is the record of the medical department of the Army as to the general efficiency of the contract surgeons? Has it been unsatisfactory?

Mr. Warren. It has been both satisfactory and unsatisfactory. There is no disposition to cast reflections upon contract surgeons. There is this, however: There is the expense of transporting those men in the beginning and closing of their term, which does not follow with the regular officers of the Army. There is, of course, a constant danger of losing the best of the contract surgeons wherever and whenever they find better places to practice their profession than in the Army. Where they receive \$1,800 per year, it does not take very much of a town or place to offer better inducements for a competent surgeon and physician than under his contract with the Army.

I do not wish to inveigh against contract surgeons as such, but the point I make is that in order to secure men with the proper talent and ambition to follow their profession and to take into consideration the future we should make them regular officers up to the minimum number that everyday peace-basis Army uses may require, and we should depend upon contract surgeons only for such extra temporary force as we may need from time to time.

The bill did not come to a vote but Chairman Warren expects it to pass at an early date.

Current Literature.

IN JAPANESE HOSPITALS DURING WAR-TIME.*

MRS. Richardson offered her services to Japan, in 1904, having previously served in South Africa in the Boer War. Her ability to speak French and German also added to her usefulness to the Japanese military surgeons, many of whom have had a German medical education. She gives us an interesting story of the Red Cross Society, the Ladies' Volunteer Nursing Association and the many hospitals of Japan. One element of strength in these three is the support and influence given by the nobility of Japan. During her duties in hospitals in caring for the wounded officers, Mrs. Richardson heard of many instances of Japanese patriotism; of the intense desire of every soldier or officer to do some service for his country and bring honor to his family; a desire which has been noted by other observers. She refers to the many cases of *Kakké*; and says that seventy per cent of the soldiers were invalided home on account of it; a percentage which seems high. When visiting the hospitals in Southern Japan, at Hiroshima, at Kokura, Ozaka, Nagoya, and the naval hospitals of Kure and Sasebo, she was shown every courtesy and many kindnesses. Her account, therefore, is highly favorable to Japan and the Japanese.—C S.B.

HOLT'S INFANCY AND CHILDHOOD.†

THE handsome third edition of Holt's standard text-book on pediatrics, in its appropriate maroon binding, is an event which merits especial note upon the part of the practicing physician. The revision given this edition has been very

*In *Japanese Hospitals During War-Time. Fifteen Months with the Red Cross Society of Japan.* April 1904 to July 1905. By MRS. J. E. RICHARDSON. 8vo; pp. 294 with 20 full page illustrations; Edinburg and London. William Blackwood & Sons, 1905.

†*The Diseases of Infancy and Childhood.* By L. EMMET HOLT, M.D. Third edition. 8vo; pp. 1174, with 241 illustrations. New York and London, D. Appleton & Co., 1906.

extensive and searching, especial changes having been made in the articles upon examination of the sick child, hypertrophic stenosis of the pylorus, diarrhoeal diseases and dysentery, vaginitis, cerebro-spinal meningitis, mental defects, chondro-dystrophy, status lymphaticus and diphtheria. Especial attention has been given to the pictorial features of the book. Most of the illustrations are new and twenty-five have been added. The work is a most interesting revelation of the scope of modern pediatrics.

INTERNATIONAL CLINICS.*

THE fourth volume of the fifteenth series of the International Clinics will add to the high reputation already attained by this admirable serial. The book is particularly remarkable for the excellence of its illustrations, the artistic work being of a high grade and finely printed. Among the subjects discussed may be noted W. S. Gottheil on the treatment of psoriasis, D. Barty King on the value of post-tussive suction as a sign of excavation in the lung, Charles F. Craig on Malta fever, John B. Deaver on operation upon the stomach, F. S. Newell on extra-uterine pregnancy, etc.

THE MIDDLE EAR AND MASTOID.†

A NOTABLE example of the high grade monograph is presented in Dr. Oppenheimer's treatise upon the Surgical Treatment of Chronic Suppuration of the Middle Ear and Mastoid. In clear and intelligent phraseology the subject is stated under two general heads. In part first, the accessory treatment of the mucosa, the ossicles, caries of the tympanic walls and after treatment of operation through the external auditory canal are taken up. Part second is occupied with the

**International Clinics*. Edited by A. O. J. KELLY, M.D. Fifteenth Series; Vol. 4; 8vo; pp. 312, with numerous illustrations. Philadelphia and London. J. B. Lippincott Co., 1906.

†*The Surgical Treatment of Chronic Suppuration of the Middle Ear and Mastoid*. By SEYMOUR OPPENHEIMER, M.D. Roy. 8vo; pp. 425, with 45 illustrations. Philadelphia. P. Blakiston's Son & Co., 1906.

mastoid operation exclusively in eight chapters. So large an amount of space devoted to the subject enables the author to treat it exhaustively and to remove any possibility of misunderstanding as to procedures. The book is handsomely illustrated with forty-five illustrations.

DISEASES OF THE SKIN.*

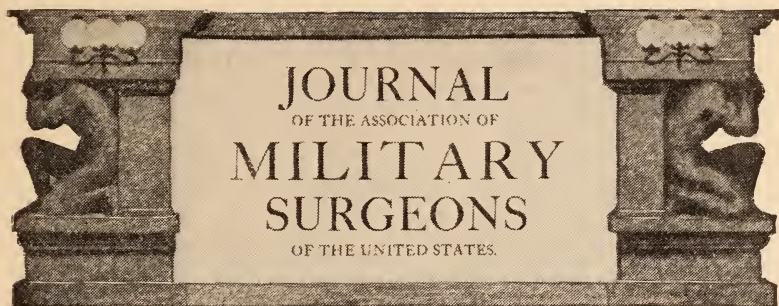
A CONVENIENT reference book for diseases of the skin, with accurate colored plates, is a most useful assistant to the work of the average practitioner whose experience in skin diseases is naturally so limited as to prevent familiarity with the appearances of these affections. In Mracek's Atlas such a book is found and with the admirable additions and revision of Prof. Stellwagon a most useful treatise is available.

DIAGNOSIS AND TREATMENT.†

THE great importance of diagnosis is accentuated latterly by the large number of works upon the subject issued from the press of our medical publishers. From time to time a number of the more recent of these books have been noted in this department, and we are glad to add to the list the handsome treatise upon diagnosis and therapeutics of Dr. Caillé. The book is an evidence of careful analytical work upon the part of the author and of the closest attention to details, upon which so often depends the successful outcome of a case of illness. The book will be found an exceedingly valuable instrument in the work of the practitioner of medicine.

**Atlas and Epitome of Diseases of the Skin.* By Prof. Dr. FRANZ MRACEK of Vienna. Edited by HENRY N. STELLWAGON, M.D., of Philadelphia. Second edition, revised and enlarged. 12mo; pp. 272, with 77 colored lithographs and 50 half tones. Philadelphia, W. B. Saunders & Co., 1905.

†*Differential Diagnosis and Treatment of Disease.* By AUGUSTUS CAILLÉ, M.D. 8vo; pp. 867, with 228 illustrations. New York and London, D. Appleton & Co., 1906.

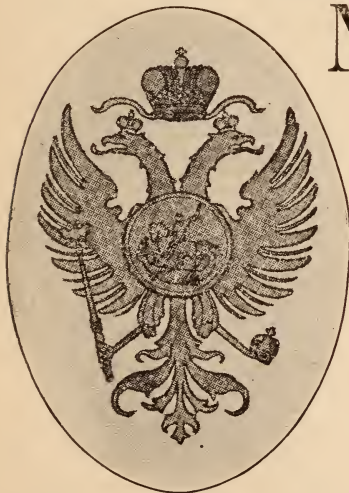


Original Memoirs.

A CONSIDERATION OF THE GUNSHOT WOUNDS INFLICTED WITH THE JAPANESE SMALL CALIBER MANTLE BULLET.

By COLONEL ROMAN ROMANOVITSCH DE WREDEN, M.D.,
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CHIEF SURGEON OF THE RUSSIAN ARMY IN MANCHURIA, MEMBER OF THE FACULTY OF THE RUSSIAN IMPERIAL MILITARY MEDICAL SCHOOL.



MUCH has been said and written before now on the subject of the small caliber mantle bullets, many experimental investigations of their effect have been made with us and abroad, many humane qualities have been ascribed to them and the introduction of them into armies is even at the present day considered an almost touching act of mercy. These bullets were not intended to destroy the enemy but only mercifully to remove the greatest number of men possible, for a more or less considerable period of time, out of the ranks of the combatants. Such was the intended purpose of this

bullet; the Anglo-Boer war however, already produced a certain amount of disappointment, whereas the present Russo-Japanese war has completely determined the destructive character of the effect of the small-caliber mantle bullet, which tears and comminutes and becomes deformed relatively to the distance and the qualities of the obstacle it meets. The issues of wounds not followed by immediate death speak as little in favor of as against the wounding weapon, as they depend chiefly upon the subsequent treatment. I regret to say however that until now in estimating the effect of the small caliber mantle bullet but too little importance has been attributed to this circumstance. The new mantle bullets in certain conditions comminute bones with greater power than did the old leaden ones, entirely similar to which, can be considered the modern shrapnel bullet. Issues of gunshot fractures however, shrapnel fractures included, are far more favorable than in former wars, and from the beginning of hostilities till January 1st, 1905, there was but one amputated per 200 wounded. This success however must evidently be attributed not to the improvement of arms but to the progress of surgery.

The same must be said of light wounds. The effect of the weapon should not be judged of by the issue of the wounding, but by the nature of the injury it inflicts.

In this respect the wounds inflicted with the Japanese small caliber mantle bullet are very varied in appearance dependent on the distance from which the shot is fired and the density of the injured tissues.

The shorter the distance and the richer the injured region in fluid the greater the destructive effect of this bullet. From this it ensues that a strict division into zones does not bear criticism and for the purpose of attaining a clear idea of the effect of this bullet it is necessary to study its effect on different regions of our body in connection with the distance from which the shot is fired. In order to avoid unnecessary repetition however it is essential to make a preliminary short general description of the effect of this bullet on soft tissues and on bones. I shall begin with the soft tissues, of which the blood vessels present the greatest interest.

On account of its great vital force, a bullet when striking a

vessel full of blood, destroys it more or less extensively in the same way in which in experimental shooting different receptacles containing liquid and semi-liquid substances are destroyed. This explosive effect on blood vessels is observed when the bullet is fired at a distance approximately up to 150–200 steps. The heart at such a distance is rent by the bullet into fragments, and large arterial trunks, subject to a more or less considerable extent to the same effect, produce mortal hemorrhages, especially in cases when a part of the blood vessel, located comparatively near the surface, is injured. With the increase of distance the explosive effect disappears and the bullet either perforates the blood vessel or injures the integrity of its walls. Thanks to the narrowness of the canal made by the bullet and to the elasticity of the tissues the latter closes immediately, and thanks to the contraction of muscles often contracts entirely. Blood forced by the heart through the wounded vessel into the surrounding tissues assists the closing of the canal; this leads to the development of different aneurisms a number of which were observed in the present campaign.

Wounds of muscles, aponeuroses and tendons appear generally in the shape of crevice-like canals (nervous trunks are often completely broken), but in case of simultaneous fractures of bones, subject to the distance, more or less extensive bruises of the soft tissues are observed. The wounds of entrance and of exit on the skin are very varied in size and outlines and do not depend as much on the distance at which the bullet is fired as on the angle at which it injures the surface of the region in question, the wound of exit however is always larger than the wound of entrance. This difference is particularly great in cases in which the bullet injures the bone, fragments of which are carried out by the bullet through the wound of exit, the bullet itself often becoming deformed.

Regarding fractures of bones it must first be mentioned that lesions of spongy bones, other conditions being equal are of a far less destructive nature than lesions of tubular bones. In these last the most serious lesions are those of the diaphysis; next come those of the metaphysis, and the slightest lesions are those of the epiphysis which contain no closed osseo-cerebral cavities. The bursting effect of the bullet on the epiphyses and spongy bones is

abserved only when the shot is fired from a short distance, up to 100 steps; at a greater distance the bullet perforates them without becoming deformed, the number of crevices being inversely proportionate to the distance from which the shot is fired. The bursting effect on the diaphysis however is maintained up to the distance of 800 steps, approximately. The metaphysis occupies an intermediate position, but even when shot from a distance up to 3,000 steps the bullet comminutes tubular bones, in this case, however, contrariwise to the case when the bullet is fired from a short distance, large splinters connected with periosteum are observed.

Having thus made a short general description of the effect of the Japanese bullet on soft tissues and on bones, I shall allow myself to make a short description of wounds according to different regions of our body.

All lesions of the cranial cavity inflicted at an approximate distance of 200 steps or less are absolutely mortal on account of a distinctly expressed hydraulic and hydro-dynamic action of the contents of the cranial cavity; at a distance up to 100 steps the greatest part of the roof of the skull is carried off together with the integuments and the brain. Beginning at a distance of more than 200 steps tangential shots admit recoveries the number of which is proportionate to the distance from which the shot is fired. Perforating wounds of the cranial cavity however, even when inflicted from a distance up to 1,000 steps are generally followed by death. Only when inflicted beginning at the distance of 1,200 steps do fractures of the skull become perforating hole-fractures and admit recovery.

Wounds of the facial part of the head generally lead to severe destruction only when inflicted from a short distance up to 100 steps, in which case the lower jaw bone is comminuted into small fragments. This is often accompanied by profuse hemorrhages of the jaw arteries and those of the basis of the mouth cavity, but even at a considerable distance the lower jaw-bone is always subject to severe splinter fractures.

Wounds of the neck inflicted at a short distance are mortal in all cases when large blood-vessels, respiratory passages or the alimentary canal are injured. Perforating wounds of the neck

when inflicted at a distance of 400 steps or more, are not as a rule accompanied by grave symptoms, wounds of large arterial trunks, which are always followed by rapid development of aneurism, excepted.

I have already partly mentioned wounds of the thorax when speaking of wounds of the heart and of large blood vessels. Concerning wounds of the lungs one can but agree with Küttner's opinion, that "gunshot wounds of the lungs belong to the class of the most favourable injuries inflicted with the mantle bullet." The distance in these cases is of less importance than the fact, has the bullet passed through the intercostal space, through a rib, or through some other bone? In the latter case fragments of the bone carried out by the bullet work a far greater destruction on the tissues of the lungs intensely increasing the wound of exit in size. Nevertheless even in this case the wounded are able to walk or ride without foreign help as far as the field ambulance and only in cases when large bronchi are injured is a rapidly developing pneumothorax in the first instance accompanied by grave symptoms.

Wounds of the abdomen inflicted from a distance up to 200 steps are absolutely mortal on account of an explosive effect of the bullet distinctly expressed at such a distance, on intestines, urinary passages and parenchymatous organs. With the increase of distance and subject to the degree of filling of the intestines and the bladder the picture changes rapidly and beginning at the distance of 400 steps the explosive effect is hardly perceptible. The bullet perforates the parenchymatous organs, the stomach, the intestines and the bladder in the shape of rapidly closing crevices. Neither falling out nor prolapsing of the mucous membrane are observed, and a rapidly developing adhesive inflammation, when full rest is maintained, separates, in the course of a few hours, the injured region from the rest of the abdominal cavity.

To the class of very grave wounds belong those of the vertebral column. These lesions, subject to the distance from which they are inflicted, either kill very rapidly or cripple the wounded, according to the degree in which the spinal cord is injured. •

Regarding gunshot wounds of the extremities nearly all has already been said in the description of wounds of soft tissues and of bones. It is necessary to mention only, that in cases when bones, and especially diaphyses, are injured from a distance less than 100 steps, the possibility of conserving the extremity is always doubtful, in view of the great destruction of soft tissues in the region of the wound of exit. Carrying out with it fragments of comminuted bone and becoming itself deformed, the mantle bullet often in such cases works those dreadful destructions, which have always been, and are at present the cause that gives rise to the suspicion of the enemy as guilty of using bursting bullets.

It is beyond all doubt however, that this explosive character belongs in certain cases to the mantle bullet which, when struck against a bone easily becomes deformed in proportion to the density of the bone that is struck. The disfigurement of the bullet is therefore greatest in cases when the diaphysis of the femur or the tibia is struck.

Deformed bullets certainly work far greater destruction; this explains the cause of the graver nature of wounds inflicted by deflected bullets. In winter such wounds are particularly frequent, as a great number of bullets are deflected from the surface of the ice, frozen ground and frozen earth of the trenches; in warm seasons also, however, bullets are easily deflected from wet or stony ground, and the surface of water as well as from stone buildings and various metal objects.

Bringing to a total all the above said, we come to the conclusion that to the class of comparatively light lesions, among those inflicted by the Japanese mantle bullet, belong wounds of soft tissues (those of nerves and blood-vessels excluded), wounds of the lungs and wounds of spongy bones. At the same time, however these same bullets produce a more or less distinctly expressed explosive effect, when fired from a short distance up to 250 steps approximately. If to the above said be added the long range, the quickness and the accuracy of fire, then to the usual question—"is the mantle bullet humane?"—the answer will be: "yes, but on condition that war be carried on in a warm season (before the

frosts set in), in a dry district with soft stoneless ground, remote from rocks and stone buildings, that the intestines and the bladder be carefully emptied before battle, that the combatants, when firing, approach each other no nearer than 250 steps, that all aiming at the head be strictly forbidden." Such formulation might satisfy us from the theoretical as well as from the practical point of view, for a death-bearing weapon can become humane in reality, only on conditions excluding the possibility of waging war.

THE LOAD, CLOTHING AND EQUIPMENT OF THE NORWEGIAN FOOT SOLDIER.

A NORWEGIAN foot soldier, remarks Captain Torgersen (*Norsk tidsskrift for militær medicin*), carries 28 kg. The head dress is a soft kepi made out of gray woollen cloth, weight 220 gm.; in winter he wears a fur cap. The jacket of arms is rock-gray with a turned down collar, and with outside pockets. The trousers are rock-gray, and braces must be used. A cloak is not used, instead he uses an Icelandic woollen jacket and a waterproof sleeping bag. These, together, weigh about 3 kg. Each soldier is served with a pair of laced boots and a pair of shoes. Instead of stockings on his feet he uses cloth, weighing 185 gm. Drawers are not served out to the soldiers, but they receive two cotton shirts. Instead of a knapsack he carries a back-bag weighing 1620 gm. Each man has a triangular tent-cloth and a small tent-stick; four men with their tent-cloths and tent sticks form a tent party, with a tent roomy enough for all of them and their equipments. The canteen, of aluminum, weighs 280 gm. Each man has a cooking kettle weighing 690 gm., in which his meals during his camp life are cooked. The bread bag weighs 350 gm. The Krag-Jorgensen gun with its knife bayonet weighing 4250 gm. and has a caliber of 6.8 mm.—HANS DAAE.

MEDICAL AND SURGICAL OBSERVATIONS DURING
A THREE YEARS' TOUR OF DUTY IN
THE PHILIPPINES.*

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OBSERVATIONS UPON SURGICAL OPERATIONS AND
CONDITIONS.

THE remarks upon surgery in the Philippines, to be given in the following pages, are founded upon my experiences in the surgical department of the First Reserve Hospital (now Division Hospital), Manila, where I filled the position of chief operating surgeon for twenty-three and one-half months. During the last twenty months of this time, I was in command of the hospital and performed the duties of chief operating surgeon in addition. As this hospital was the large general hospital for the entire Archipelago, and drew its patients from the entire military personnel of the Islands, being considered the surgical operating centre for serious surgical cases, these two years of service in such an institution afforded me an admirable opportunity for observing surgical work performed under the influences of Philippine conditions and climate.

From the date of my arrival at the hospital in January, 1903, until March 1st, 1905, when my duties there terminated, there were performed by the surgeons of the hospital mentioned 775 operations, including major and minor surgical measures, and operations upon the eye, ear, nose and throat. As I have found that very mistaken ideas are entertained by the profession, both in the United States and elsewhere, upon the subject of surgical work and results in the Philippines, I trust that, by the facts to be presented, I may be able to contribute my mite toward correcting such erroneous impressions. I shall insert here, for the sake

*Concluded from the March and April JOURNALS.

of reference, a tabulated list of operations performed at the First Reserve Hospital, Manila, during the period noted above. In this list I shall give the number of the various operations with the names of the responsible operators.

During the time of my connection with this hospital, I was intimately acquainted with the work performed and results obtained in the surgical department, as all cases of importance, with very rare exceptions, came under my observation.

When important operations were assigned by me to my first assistant, which position was filled by 1st Lieutenant W. L. Keller, Assistant Surgeon U.S.A., and after Dr. Keller's departure from the Islands, by 1st Lieutenant E. L. Ruffner, Assistant Surgeon U.S.A., I almost invariably acted as first assistant, and hence, was personally familiar with every case.

TABLE VI.

OPERATIONS.	NO. OF CASES.	OPERATORS.	DIED.
Bassini operation. Inguinal Hernia...	96	Ruffner 14, Keller 22, Banister 60.....	0
Radical cure. Ventral Hernia.....	5	Banister	1
Appendicitis. Operations.....	55	Ruffner 7, Keller 11 Banister 37.....	1
Laparotomy for perforating gunshot wounds of the abdomen.....	3	Banister	2
Laparotomy for desperate conditions affecting small intestine.....	3	Keller	3
Laparotomy. Exploratory.....	7	Banister	0
Laparotomy for large intra-abdominal abscess—hypo gastric region...	1	Banister	0
Laparotomy for repair of intestinal perforation in typhoid fever.....	1	Banister	1
Laparotomy to separate extensive adhesions resulting from suppurative appendicitis operated upon two years previously. Patient an invalid from effect of adhesions...	1	Banister	0
Laparotomy on account of post-operative abscess at site of highly infective appendix, which had been removed.....	1	Banister	0

OPERATIONS.	NO. OF CASES.	OPERATORS.	DIED.
Abscess of the liver, operations for,—7 by abdominal route; 1 by thoracic route.....	8	Keller 4, Banister 4...	3
Suspected abscess of liver. Explora- tory operation by thoracic route with resection of 2 ribs.....	1	Banister	0
Suspected renal calculus. Explora- tory operation.....	1	Banister	0
Sarcoma of neck, deep. Excision.....	1	Keller	0
Sarcoma of neck, deep, involving par- otid gland. Removal of gland contraindicated. Surrounding growth removed.....	1	Banister	0
Traumatic arterio-venous aneurism of common carotid artery and inter- nal jugular vein. Ligation.....	1	Banister	1
Trephining for brain injuries.....	4	Keller 2, Banister 2...	1
Laminectomy for fracture of spine with paraplegia.....	1	Banister	0
Wiring of clavicle for comminuted fracture.....	2	Keller 1, Banister 1...	0
Wiring of fractured patella.....	2	Banister	0
Wiring of tibia for ununited com- pound fracture.....	2	Keller	0
Wiring of tibia for ununited simple fracture.....	2	Ruffner 1, Banister 1..	0
Wiring of humerus, upper fourth, un- united, gunshot fracture with ne- crosis.....	1	Banister	0
Wiring of radius and ulna for un- united fracture resulting from bolo wound.....	1	Ruffner.....	0
Resection of ribs for empyema and necrosis.....	4	Keller 3, Banister 1...	1
Resection of costal cartilage for post typhoidal necrosis.....	1	Banister	0

OPERATIONS.	NO. OF CASES.	OPERATORS.	DIED
Excision of wrist joint for old and severe compound fracture with necrosis of lower one and one-fourth inch of radius. Necrotic portion of radius excised with corresponding extent of ulna, and diseased portions of upper row of carpal bones.....	1	Banister	0
Resection of 2nd and 3rd metatarsal bones for serious gunshot wound of foot.....	1	Ruffner.....	0
Severe gunshot fracture of femur and humerus. Fractured area of femur exposed and fragments placed in apposition	1	Banister	1
Gunshot fracture of ulna. Site of fracture exposed and fragments placed in apposition.....	1	Ruffner.....	0
Suppurative mastoiditis. Radical operation.....	2	Banister	0
Amputation of penis and scrotum with castration for extensive epithelioma of parts.....	1	Keller	0
Excision of anterior half of tongue for epithelioma of tip.....	1	Banister	0
Epithelioma of cheek with induration of cervical glands. Excision of tumor and glands.....	1	Banister	0
Excision of deep and extensive benign tumor of neck.....	1	Keller	0
Fibroid tumor of neck involving submaxillary gland. Excision of tumor with ligation of facial artery	1	Banister	0
Epithelioma of nose. Excision.....	1	Ruffner.....	0
Lupus of face and nose, extensive. Removal by actual cautery.....	1	Keller	0
Large cyst of neck, deep. Excision...	1	Keller	0
Tubercular adenitis of neck. Excision.....	3	Ruffner 2, Halloran 1..	0

OPERATIONS	NO. OF CASES.	OPERATORS.	DIED.
Suppurative arthritis of knee joint. Incision and drainage.....	2	Banister	0
Synovitis, knee joint. Aspiration....	1	Ruffner.....	0
Gunshot wound of thigh. Explora- tory operation.....	1	Ruffner.....	0
Large sebaceous cysts of back and arm. Excision.....	2	Ruffner 1, Halloran 1.	0
Lipoma. Excision.....	2	Ruffner 1, Banister 1.	0
Tendo-plastic operation for con- tracted tendo-Achillis. Tendon elongated 3 inches with recovery of function.....	1	Banister	0
External perineal urethrotomy with a guide.....	4	Ruffner 1, Banister 3..	0
External perineal urethrotomy with- out a guide.....	3	Banister	0
Varicocele. Radical cure. Supra- pubic incision.....	69	Keller 31, Ruffner 24, Halloran 2, Ban- ister 12	0
Hydrocele. Radical cure. Excision of sac and drainage.....	16	Keller 5, Ruffner 3, Banister 8.....	0
Extensive necrosis of femur. Old gunshot wounds, contusion, etc. Bone exposed and necrosed bone tissue removed.....	4	Keller 1, Ruffner 2, Banister 1	0
Necrosis of lower extremity of radius from old compound fracture. Ex- posed and diseased bone tissue removed.....	1	Banister	0
Necrosis of other bones. Diseased area exposed and necrotic bone tissue removed.....	6	Ruffner 3, Halloran 1, Brooke 1, Banis- ter 1.....	0
Extensive and deep streptococcic in- fection of the lip and face. Gen- eral sepsis had developed at time of admission. Actual cautery.....	1	Keller	1
Cellulitis. Multiple incisions.....	11	Ruffner 10, Keller 1...	0
Gunshot wound of forearm. Bullet located by x-ray and removed.....	1	Keller	0

OPERATIONS.	NO. OF CASES.	OPERATORS.	DIED.
Location of revolver bullet in deep muscles of the back of neck by x-ray. Removed.....	1	Ruffner.....	0
Resection of tendon of extensor communis digitorum to middle finger..	1	Ruffner.....	0
Tuberculosis of testicle. Castration...	1	Ruffner.....	0
Multiple cysts of spermatic cord. Excision of cysts.....	1	Ruffner.....	0
Exploratory operation. Old abdominal fistula.....	1	Banister.....	0
Operations on rectum and anus. Including Whitehead's operation, hemorrhoid operations, fistula in ano, prolapse, etc.....	86	Keller 38, Ruffner 34, Halloran 12, Brooke 2.....	0
Excision of painful cicatrix of leg resulting from old gunshot wound...	1	Ruffner.....	0
Removal of piece of glass 5 x 1½ inches, from arm where it had remained for three years.....	1	Ruffner.....	0
Varicose veins of leg. Ligation and excision.....	9	Keller 5, Banister 2, Ruffner 2.....	0
Plastic operation for extensive laceration of penis and scrotum.....	1	Keller.....	0
Resection of first metacarpo-phalangeal articulation for old dislocation with ankylosis. Useful joint secured.....	1	Banister.....	0
Carbuncle, large, dorsal region. Complete excision.....	1	Ruffner.....	0
Hernia of adductor longus muscle of thigh from rupture of fascia lata...	2	Banister.....	0
Bunions. Radical operation. Resection of metatarso-phalangeal joints.....	11	Keller 6, Ruffner 3, Banister 2.....	0
Very large abscesses in mammary, lumbar, abdominal (intramural), palmar, plantar, ischio-rectal regions, and beneath pericranium. Incision, exploration and drainage.....	17	Ruffner 8, Keller 4, Brooke 3, Banister 2.....	0
Abscess of ordinary gravity. Incision and drainage.....	49	Ruffner.....	0

OPERATIONS.	NO. OF CASES.	OPERATORS.	DIED.
Amputations of fingers and toes.....	15	Ruffner 13, Keller 2...	0
Ingrowing nails, great toe. Radical operation.....	9	Ruffner.....	0
Circumcision.....	9	Ruffner 6, Keller 2, Halloran 1.....	0
Adenitis, inguinal, suppurative. Excision and curetting.....	13	Ruffner 9, Keller 2, Halloran 2.....	0
Amputation of penis. Brought to hospital with penis gangrenous from infection following rupture of urethra and extravasation of urine	1	Banister	0
Enucleation of eye ball. Blind and causing sympathetic irritation of sound eye in each instance.....	8	Stiles 1, Ruffner 2, Banister 5.....	0
Cataract operations. Extraction 4. Needling 1.....	5	Stiles 1, Banister 4...	0
Strabismus operations.....	15	Stiles 1, Ruffner 2, Banister 12.....	0
Other eye operations.....	113	Stiles 65, Ruffner 38, Banister 10.....	0
Ear operations in addition to the two mastoid operations noted.....	27	Stiles 26, Banister 1...	0
Operations on the nose and throat...	28	Stiles.....	0
Grand total.....	775	16

GENERAL REMARKS.

Of the 775 operations noted in the above table, 181 involved the peritoneal cavity, and 240, counting the four cataract extractions, may be easily accounted *major operations*. Following this amount of operative work, there occurred sixteen deaths, a mortality rate of 2.06 per cent. Most of these sixteen fatalities occurred in patients, who were moribund when brought to the hospital, and who were subjected to immediate operation in the forlorn hope of saving life, and the remainder were in hopeless conditions when placed upon the operating table, with one exception, and in the latter case death from tetanus was due to in-

fection from dust blown into the operating room during the operation. These cases were the following:

1. One case of suppurative appendicitis, which had seized a civilian employee of an Army transport just as the vessel sailed from the United States, resulted fatally. Upon arrival in the Philippines this patient was transferred to the hospital and operated upon at once. He was suffering from general sepsis, in consequence of the long delay, and his death could not be prevented. Dr. Ruffner was the operator in this case, and I acted as first assistant.

2. Two cases of perforating gunshot wounds of the abdomen were operated upon by me without success. The first case was not brought to the hospital until twenty hours after the reception of the wound. He was at once subjected to operation, and the small intestine was found to be so severely lacerated that it was necessary to make a resection of the intestine and an end to end anastomosis with the Murphy button. This man survived for four days, and after death it was found that the intestine was gangrenous for about twelve inches on each side of the union. The second patient was accidentally shot with a Krag rifle, the bullet tearing the right common iliac vein just at its bifurcation. The patient was moribund when he reached the hospital, and died on the operating table from hemorrhage before the veins could be reached and secured. This fatality could not have been prevented.

3. Three other cases were brought to the hospital *in extremis* and were subjected to operation at the hands of Dr. Keller, I acting as first assistant. One patient was suffering from an intestinal rent as the result of an injury, and died of septic peritonitis within twenty-four hours after the operation. A second was moribund from acute intestinal obstruction caused by bands of adhesions with resulting gangrene of the intestine. It was impossible to save him. A third was in the last stages of an extensive sarcoma involving the small intestine, the removal of which was found at the operation to be contraindicated, and his death occurred in a few days as the direct result of the malignant disease.

4. One victim of intestinal perforation, occurring during typhoid fever, was operated upon by me without success.

5. One case of diffuse traumatic arterio-venous aneurism of the carotid artery and internal jugular vein, resulting from a stab at the hands of a Moro, was operated upon by me with the assistance of Dr. Keller, as a last resort. This man was in imminent danger of death from hemorrhage at any moment. This case resulted fatally.

6. A case of most extensive fracture of the skull, involving the vertex and base, was trephined by me while the patient was virtually moribund, and depressed bone raised. The man died promptly as the result of his injury, having never regained consciousness after the receipt of the same.

7. A civilian employee was shot with a revolver at close range and his humerus and femur shattered. I found it necessary to expose the site of the fracture of the femur and adjust the fractured portions of the bone in consequence of the extensive shattering and displacement. This man died as the result of his injury in twenty-four hours.

8. One patient brought to the hospital with a deep and extensive streptococcic infection involving the lip and face, died of general sepsis in a few days. The only operation in his case was the use of the actual cautery by Dr. Keller; which had nothing to do with his death. This death however is charged against our operation account in order that I may err on the safe side.

9. I resected a rib in a native scout on account of symptoms of empyema. This man died of pulmonary tuberculosis *nine days after the operation*.

10. Three cases of liver abscess resulted fatally after operation. Two of these patients had large multilocular abscesses, and one a large single abscess. The former patients were operated upon by Dr. Keller, the latter by me.

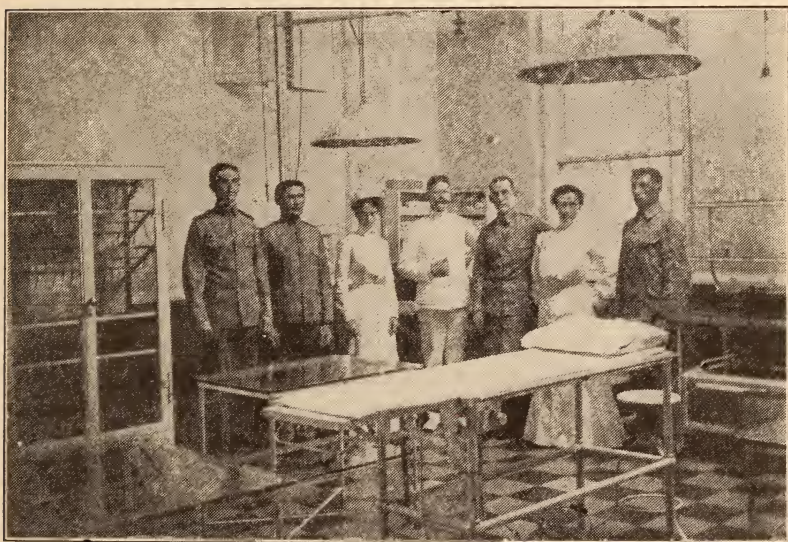
11. One patient subjected to operation on account of ventral hernia died of tetanus, as before noted. By bacteriological methods the infection was traced by First Lieutenant H. M. Smith, Assistant Surgeon, U.S.A., the pathologist of the hospital, to the dust which must have blown into the operating room from the street during the operation. True cultures of tetanus were secured from this dust and the disease given to guinea pigs by their use. No flaw could be discovered in the sterilization of dressings or ligatures. This was the only death in the list given, which could be directly charged to the operation performed. I was the operator in this case, and never performed an operation with greater care or attention to details.

In this mortality list there is not a death, which would not have occurred under the best auspices in any climate, except the fatality from tetanus. In this connection I may mention that the soil of the Philippines is rich in tetanus spores, though this condition of affairs likewise exists in certain regions of our country, notably along the Eastern coast of New Jersey.

RESULT OF OPERATIONS FOR THE RADICAL CURE OF INGUINAL HERNIA.

For the radical cure of inguinal hernia by the Bassini method ninety-six operations were performed at the hospital during my incumbency, fourteen of which were performed by Dr. Ruffner, twenty-two by Dr. Keller and sixty by me. *The results obtained in these operations were simply perfect, there having been first*

union in every case, and not a single instance of recurrence in our entire list ever having been reported. In one of these cases a minute stitch abscess developed around one of the superficial skin sutures of silkworm gut, but was of no importance whatever, in fact not being worthy of the name of "stitch abscess." The whole wound healed by first union except at this single point. These patients were all returned to duty. I can claim for the hernia work at the First Reserve Hospital, during the period



10.—Aseptic Operating Room, First Reserve Hospital, Manila, P. I.

given, 100 per cent of successes, in recoveries, in aseptic results and in absence of recurrences.

I do not think that this record could be quoted as an argument against surgical work in the Philippines.

RESULTS IN APPENDICITIS.

Fifty-five operations for this disease were performed with one death. These operations were undertaken for every variety of the disease and there was no selection of favorable cases for operation.

Appendicitis cases were operated upon as soon as possible after their arrival at the hospital, as it was my fixed policy that such patients should be subjected to radical measures of relief at as early a stage of the disease as possible. To this policy I attribute much of the success following this line of work at the hospital. As before noted, the one fatality occurred in the case of a patient, who developed the disease just as the transport sailed from the United States, and, who when transferred to the hospital after his long voyage across the Pacific, was affected with a large appendicular abscess and general sepsis. This patient was operated upon by Dr. Ruffner, with my assistance. First union occurred in every case in this list in which no infection existed outside of the appendix, and our drainage cases progressed toward recovery as rapidly as such cases would anywhere else. *I could never see any relation between the climate of the Philippines, and either the frequency of the occurrence of appendicitis, or the type assumed by the disease after it had developed.*

In short, appendicitis in the Philippines is the same treacherous affection that we have all been accustomed to observe in the United States, and at the First Reserve Hospital we would operate upon these cases with the same feeling of confidence that we would entertain under similar circumstances at home.

Of the thirty-seven appendicitis patients operated upon by me, two died afterwards of intercurrent affections, which had no relation to the operation. The first of these two patients died thirty days after the operation. The wound had healed by first union, and at the autopsy no indication of the slightest trouble at the former site of the appendix could be discovered. The second patient dropped dead from a cardiac lesion after convalescence.

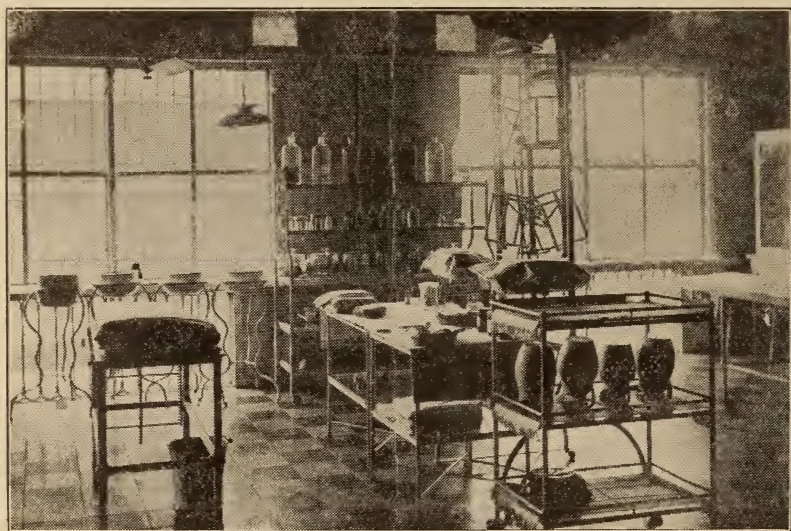
ABSCESS OF THE LIVER.

During my service at the hospital eight operations for liver abscess were performed on seven patients, one patient having been aspirated prior to a subsequent operation by abdominal section. These cases of hepatic involvement occurred in patients, who had been affected with "amebiasis," and were directly due

to amoebic invasion of the liver. When one considers the number of cases of dysentery handled at the First Reserve Hospital during this period, and bears in mind the fact that cases of liver abscess developing elsewhere in the Islands among the military personnel, would as a rule, have been sent to this hospital for surgical treatment, these seven cases of liver involvement present an insignificant ratio, and tend to cast a little doubt upon the assumed frequency of the occurrence of this condition as a complication, or sequel, of amoebic dysentery. We were constantly on the watch for these liver abscesses, and of the seven exploratory laparotomies performed by me (see table of operations), six were done with the object of clearing up the diagnosis in suspicious cases of this type. I also performed one exploratory operation by the thoracic route with resection of two ribs. In none of these seven exploratory operations was a liver abscess found, and in all, the patients experienced marked relief as the result of the operation. In all probability this was due to the local blood letting, to which the liver was subjected in the use of the aspirating needle, which was invariably employed in the search for pus after the abdomen had been opened. In most of these cases the liver was enlarged and exhibited evidence of peri-hepatitis. The local bleeding was a good therapeutic measure. In this connection, I shall state that in my opinion, when an exploration of the liver is advisable, a laparotomy should be used, the incision being placed parallel with the border of the thorax, and being of sufficient length to permit of the introduction of the hand, so that the liver may be thoroughly examined. Then through this incision the aspirating needle can be accurately passed into the liver in different directions in search of pus.

I am opposed to the introduction of the aspirating needle through the intact abdominal, or thoracic, parietes, unless an abscess is evidently pointing at the spot of puncture, both on the score of the unsatisfactory result to be expected, and by reason of the existence of an element of danger. The exploratory laparotomy is in every way more satisfactory, and not a whit more dangerous. If under its use an abscess is located, we can at once wall off the peritoneal cavity with gauze, and either im-

mediately open the abscess and drain, or allow adhesions to form as a result of the packing prior to securing drainage. On the whole I prefer the immediate treatment of the abscess. No attempt should be made to suture the liver to the abdominal wound. This is a waste of time as the sutures will invariably tear out owing to the friable condition of the liver, and indeed most frequently the abscess will be located at a higher point than the abdominal wound unless delay has permitted it to point below the ribs. Three deaths occurred in our liver abscess surgery.



11.—Operating Room for Septic Cases at the First Reserve Hospital, Manila, P. I.

Two of these patients had multilocular abscesses and one a large single abscess. The latter case was operated upon by me. The abdomen was opened as indicated, and the liver thoroughly explored by immediate palpation, and by the aspirating needle. *No abscess could be discovered.* This patient was very low at the time of the operation. Death occurred in a day or two. At the autopsy the pathologist, First Lieutenant H. D. Bloombergh, Assistant Surgeon, U.S.A., made a careful search for the abscess, which we all believed to exist, *but without success.* There was

not a sign of an adhesion, or anything else, to indicate the existence of an abscess. In lifting the liver from the abdomen the abscess, which existed near the posterior border of the right lobe, was ruptured, and revealed its presence. I mention this matter somewhat in detail as a proof of the extreme difficulty frequently encountered in locating a liver abscess still confined within the limits of the viscus, even when the abdomen has been opened, and a careful exploration made. It was simply impossible to locate this abscess through the anterior incision. If the thoracic route had been selected, and the ribs resected well back, the abscess might have been detected by the aspirating needle passed through the diaphragm, but there was no symptom presenting to cause the selection of this route in preference to that through the abdomen, which latter was chosen as probably affording the most ready avenue of access.

BONE SURGERY.

This line of surgery is followed by excellent results in the Philippines, and no one need hesitate to operate upon joints, or the osseous tissues generally, on account of any supposed detrimental climatic influence. From a scrutiny of the list of surgical operations given in the table, it can be seen that the following bone operations were performed.

Laminectomy, 1; excision of the wrist joint, 1; wiring for fractures of long bones, 8; wiring for fractures of the patella, 2; trephining for cranial injuries, 4; operation upon the mastoid for suppurative mastoiditis, 2; resection of ribs, 7; resection of 2nd and 3rd metatarsal bones, 1; resection of 1st metacarpo-phalangeal joint, 1; resection of 1st metatarso-phalangeal joint, 11; operations upon the femur, tibia, radius, tarsal bones, etc., for necrosis, 11; exposure of comminuted gunshot fracture of femur 1; gunshot fracture of ulna 1; amputations of fingers and toes 16. In this list three deaths occurred as follows: one case of fatal injury to brain with extensive fracture of skull,—trephined; one case in which a rib was resected, the patient dying of pulmonary disease; and one case of severe gunshot fracture of the femur and humerus.

These three cases have been noted previously in the remarks upon the general mortality.

The laminectomy was performed for a severe fracture of the spine in the lower dorsal region. The laminae of two vertebrae were removed but the spinal cord was found disorganized at this spot by the force of the injury. The complete paraplegia existing remained permanent in consequence, but the patient, a native scout, was alive a year and a half after the operation, and may be living yet.

The excision of the wrist joint involved, besides the usual structures, an inch and a quarter of the lower extremities of the radius and ulna. This operation was necessary on account of a severe compound fracture, which had left a useless hand and wrist; the lower inch and a quarter of the radius was necrosed and suppurating. An excellent result was secured, and I have learned from one of our surgical attendants, just returned from the Islands, that this man can now row a boat with this arm, and has good use of it. The wiring of bones for ununited fracture was, as a rule, very satisfactory. The patient, whose radius and ulna were wired for compound fracture resulting from a bolo wound, did not secure good union, I have just learned, and I am in doubt concerning the patient wired for ununited gunshot fracture of the humerus with necrosis. Union was taking place satisfactorily when he arrived in the United States, but I do not know the final result. One of the operations in which the patella was wired did not result satisfactorily as, owing to the excessive shattering of the bone by the kick of a horse, it was found impossible to properly unite the fragments by wiring. Suppuration resulted in this case and it was necessary to open the wound and remove the diseased fragments. The other case noted resulted in perfect recovery with bony union. These operations all resulted as well as they could have been expected to do in any climate in the world.

BRIEF NOTES UPON OTHER OPERATIONS.

Of the three patients suffering from perforating gunshot wounds of the abdomen two died as mentioned, but I was able to save the third patient by a prompt laparotomy with the repair of the wounded intestine. For the radical cure of ventral hernia

five operations were performed. Of these, four patients were radically cured, the wounds healing by first union, and one fatality resulted from tetanus, as before described. A perfect result followed every operation for varicocele and hydrocele, of which there were sixty-nine for the former, and sixteen for the latter condition.

The supra-pubic incision was invariably used in the operation for varicocele, and the excision of the tunica vaginalis with drainage employed in the radical treatment of hydrocele. It will be noted that seven perineal sections were performed, four with and three without a guide. All were successful.

In the case of a patient with extensive adhesions of the cecum and omentum to the parietal peritoneum, which condition had existed for two years as the result of an old suppurative appendicitis, which had been subjected to operation with drainage, patient being an invalid in consequence, a perfect cure was secured by a laparotomy with separation of the adhesions, a portion of the omentum being removed.

ASEPTIC RESULTS IN THE PHILIPPINES.

For the two years, during which I was connected with the surgical work at the First Reserve Hospital, *there was never a trace of pyogenic infection in any clean case subjected to operation with the three following exceptions.*

1. The minute stitch abscess noted before as having occurred around one suture in the skin of a hernia wound, while the remainder of the wound healed by first union.
2. In an operation for the repair of the fascia lata in the thigh a slight superficial infection resulted, owing to the restlessness of the patient, which caused the wound to become uncovered.
3. Suppuration resulted from an operation on the knee joint on account of a very serious direct injury, which had broken the patella into many fragments, as before mentioned.

These three exceptions were noted in a paper read before the Manila Medical Society on February 1st, 1904, and published in the *Journal of the American Medical Association* of April 30th, 1904. Not a single case of infection in a clean case occurred from that time until March 1st, when my duties at the hospital terminated.

I desire to place myself upon record as affirming that with a careful and systematic aseptic technique there is no more danger of pyogenic infection in the Philippines than in the United States, and I claim that the aseptic record obtained at the First Reserve Hospital thoroughly proves this proposition. Tetanus spores must be guarded against owing to their prevalence in the soil of the Philippines, as proved by the fatal case of tetanus, which occurred as a result of one of my operations.

In the paper entitled "Surgical Observations in the Philippines," and published in the *Journal of the American Medical Association*, April 30th, 1904, I summed up my views upon the subject of surgery in the Philippines in a series of conclusions.

As further observation and experience have had the effect of still further convincing me of the correctness of these views, I feel that I cannot more clearly express my opinions on this subject than by quoting these conclusions from the periodical mentioned.

CONCLUSIONS.

1. Aseptic results will just as surely follow aseptic methods in the Philippines as in the United States or Europe.

2. Should septic infection occur in any clean case subjected to operation in the Philippines, blame the technique, not the climate.

3. Successful attainment of the object for which operation has been undertaken, will follow careful and skillful surgery in the Philippines, with the same regularity that we have been accustomed to observe in such work at home.

4. Convalescence after surgical operations in the Philippines is rapid and satisfactory when such operations have been carefully and skillfully performed.

5. The danger of mortality after a skillfully performed surgical operation, in which all the details of a rigid aseptic technique have been carried out, is not increased by the influences of the climate of the Philippines unless the patient is, at the same time, the victim of some other disease.

THE DISABILITY FROM HERNIA IN MEN ENGAGED
IN THE MARINE SERVICES; THE OPERATION
FOR THE RADICAL CURE WITH A REPORT
OF CASES.

By H. W. AUSTIN, M. D.,

SURGEON IN THE UNITED STATES PUBLIC HEALTH AND
MARINE HOSPITAL SERVICE.

THE subject of this article embraces several problems with which medical officers of the Public Health and Marine Hospital Service have to deal in their capacity as examining surgeons for entrance to various Government Services. Briefly stated, the determination of the degree of disability on account of hernia in pension and waiting order cases; the risk to the public from persons with hernia occupying certain responsible positions; the risk to the person having hernia doing certain physical labor and the comparative risk of an operation for the radical cure in certain cases, with the treatment by trusses.

Under Government regulations, applicants for examination for entrance to the Commissioned Corps of the Public Health and Marine Hospital Service and United States Revenue Cutter Service, also for enlisted men in the United States Revenue Cutter and Life Saving Services, having hernia are rejected. In the medical examination of arriving immigrants those suffering from hernia are frequently rejected on the ground that they are liable to become a public charge. In the American merchant marine a physical examination of the crew of a vessel is occasionally made prior to shipment, at the request of the master and a certificate given as to their physical condition. This however is optional with the master as this examination is not required by law; in such cases hernia would usually debar the applicant. Masters, pilots, and engineers in the American Merchant Marine, before

obtaining a Government license, are required to be examined as to their hearing and vision, but not for hernia or other physical defects.

In the annual report of the Surgeon General of the Public Health and Marine Hospital Service for the fiscal year 1904, it is shown that 770 officers and seamen applied for relief for hernia at the various United States Marine Hospitals and dispensaries of which number 134 were admitted to hospital for operation for radical cure, and 636 were furnished out-relief in the form of trusses. Of the 134 cases operated on, 118 were oblique inguinal: seven direct inguinal; one umbilical; two ventral; and six strangulated inguinal (not stated whether oblique or direct). Two deaths occurred in strangulated cases operated on and in 132 cases the operation was successful.

It is well to state here that operation for the radical cure was recommended in many of the cases to whom trusses were furnished but the operation was refused.

Major Robinson, Surgeon United States Army, says "excepting gunshot wounds hernia is the most common surgical condition in the Philippines." He attributes the cause to the gradual loss of muscular tone, sudden loss of flesh, but especially to the Army belt which has been abandoned by almost every army but our own. He recommends the operation for radical cure in all cases of inguinal hernia.

A glance at the statistics showing the frequency of hernia among men during the period when their physical activities are greatest will readily show the importance of the subject. The most elaborate statistics are those of Malgaigne. He states that in males at the age of 21 years there is one case of hernia in 32; at 28, 1 in 21; at 35, 1 in 17; at 40, 1 in 9; at 50, 1 in 6, and from 60 to 70, 1 in 4.

In a statistical report on hernia by John Langston he says the largest number of inguinal hernia in both sexes occur between the ages of fifteen and twenty-five.

The relative frequency of inguinal and femoral hernia in the male is placed at quite different figures by different observers; I

find it a comparatively rare affection among sailors. I would place it at about one femoral to 100 inguinal. It is more often found in the female.

Reliable statistics showing the relative frequency of strangulation in reducible hernia are wanting. The English Surgeon, John Wood, author of the subcutaneous wire method of operation, places it at twenty-five per cent. At the present time I believe this estimate entirely too high. It is interesting to read the opinions given by the Surgeons of the eighteenth and nineteenth centuries and note the progress made in the treatment of the disease. To cite a few examples:—Pott, the English Surgeon writing in 1775 on ruptures says, "to replace the prolapsed body or bodies within the cavity of the belly and prevent their falling out again by means of a proper bandage [truss] is all the art of Surgery is capable of doing in this disease." The American Surgeon, Gibson, in his work on Surgery 1832 says, "for reducible hernia an appropriate truss is the only remedy and the sooner applied, the better." John Erichsen 1877 says "The only plan that is at the same time perfectly safe and permanently successful is the compression of a well made truss, in this way not infrequently the hernia of infants are radically cured. The same result however seldom occurs at a more advanced period of life." He mentions however the Wertzer and the Wood operation.

Among the first operations for radical cure other than wearing of a truss was that devised by Heaton in which a subcutaneous injection of an infusion of oak bark around the neck of the sac was the method recommended. For a time this method had its advocates but it has been abandoned by the best surgeons as being unreliable and not as safe as the other methods. Very recently I was called on to prescribe for an officer in one of the Government Services, who had been persuaded to be operated on for an oblique inguinal hernia, by this method, by a Doctor who advertises that he can cure hernia without the knife or without pain. I found the patient doubled up in bed suffering the most intense pain, abdomen rigid and tender with symptoms of a local peritonitis. He however, after several days of severe pain recovered, but the hernia was not cured.

In acquired inguinal hernia in children under four years of age a well fitting truss will usually effect a cure, but in the adult a permanent cure by this means rarely occurs. During the past twenty-five or thirty years numerous methods have been devised generally the last one offering some improvement on the former and at present there remain two or three methods similar in character that are generally adopted. I prefer the Bassini method and believe it to be the safest and most reliable and usually adopt it in my work; however, good results are obtained by the Halsted and other modern operations.

In deciding upon the treatment we have to consider the disability, the inconvenience, expense, and burden to the patient in wearing a truss for life, and the risk to life from strangulation that pertains to those who suffer from inguinal hernia. To persons who are engaged in active physical labor the disability is real and the risk from strangulation is considerable. Men with hernia frequently do hard labor but they must be cautious in keeping their trusses adjusted and are working at a disadvantage and as is frequently the case as they grow older the hernia becomes so large that it is with great difficulty retained.

The risk from strangulation among sailors or others who are not within reach of medical aid is apparent. Masters of vessels and pilots, keepers and surfmen and boat's crews who are frequently called upon for extraordinary muscular exertion may become suddenly disabled on account of hernia, involving not only risk to themselves but to others. I have observed that hernia is frequently found among masters, pilots and steersmen, which is no doubt due to the severe physical exertion required at the wheel in heavy seas. This was more noticeable before the time of the steam steering gear now in use on large steam vessels. I believe that applicants for first license to such responsible positions having hernia should be rejected.

The risk to the patient undergoing an operation for radical cure in such cases as warrant the operation is I believe far less than the risk of strangulation where no operation is performed. In uncomplicated cases of reducible inguinal hernia the risk is very small and largely due to the anaesthetic. In this statement

it is implied that the operator is skillful and that he is provided with means for strict aseptic surgery. In old irreducible hernia requiring considerable time for the operation the risk from the operation is somewhat greater, but the risk is frequently great in such cases from strangulation without operation. Local anaesthesia for hernia operations is recommended by some surgeons in cases in which general anaesthesia is considered unsafe or likely to cause harmful sequelae.

Very large irreducible hernias in which the sac contains a large part of the intestines and also the omentum, are occasionally seen but not in Service work. I doubt the advisability of an operation in such cases.

I have no elaborate statistics at hand showing the mortality from the operation in adults which do not include cases of strangulated hernia which for the purposes of this article are of no value. In the cases which I have operated on for the radical cure (about forty) I have had no serious result in any case. As reported by Bull and Coley there were fifteen hundred operations for the radical cure of hernia in children at the Hospital for Ruptured and Crippled during a period of fourteen years 1891 to 1904 with four deaths a mortality of less than three-tenths of one per cent. The risk from an operation in a child with a recent acquired inguinal hernia is possibly less than in an adult.

Usually I would not recommend an operation in persons over fifty-five years old, when the hernia can be retained with a truss. There are many cases however in which the operation in persons above this age would be successful and the risk would be justified, but as a rule the operation is not so likely to be permanently successful. The risk is greater and the period of relief shorter.

Persons over fifty-five years old who are very fat and have thick abdominal walls are not favorable cases for operation, as a permanent cure is not so likely to be obtained. However in this class of cases there may be great difficulty in retaining the hernia with a truss and the operation may be warranted. Men required to perform hard labor whose age is above fifty-five once having

had symptoms of strangulation, should be operated on. In recent hernia the operation is less difficult and there is more certainty of a permanent cure.

Young muscular persons with recent hernia are the most favorable subjects for an operation and in this class the per cent of permanent cures should be nearly 100.

In the report of Bull and Coley above cited there were but six relapses in 1076 Bassini operations and five relapses in 125 operations in which the cord was not transplanted. I have seen many of the cases I have operated on six months to a year after the operation and there was no relapse in any case I have operated on that I have heard of.

I believe that all adults under fifty-five years of age whose vocation necessitates severe physical exertion, as that of the sailor or the soldier, suffering from inguinal hernia are best treated by the operation for the radical cure such as the Bassini or Halsted, and that it should be recommended in all such cases unless there is some special contra-indication that would prevent the patient undergoing any surgical operation requiring an anaesthetic.

Each case of irreducible hernia is a law unto itself, but if the hernia is not very large and the patient is in fair health not over sixty years old and especially if the bowel comes down at times I would recommend an operation. The liability to strangulation in these cases is greater than in any other except in enterocele in which the opening in the ring is very small. Immediate operation in all strangulated hernia without temporizing I believe the safest procedure and the operation should be for radical cure when possible.

The following is a brief report from the clinical histories of cases which I have operated on at the United States Marine Hospital at Detroit, Mich., during my tour of service at this station:

Case 1.—M. D. Age 22, right direct, acquired from a fall, inguinal hernia; duration two years; Bassini operation; primary union; time in hospital eighteen days; result cured.

Case 2.—A. M. Age 23; double oblique inguinal hernia, acquired by lifting; duration eight years; Bassini operation; right side only at patient's request, primary union; time in hospital twenty-five days; result cured.

Case 3.—Same as above; patient decided to have left hernia operated on; Bassini operation; primary union; time in hospital twenty-three days; result cured.

Case 4.—L. S. Age 26, Direct inguinal hernia acquired; duration two years; Bassini, primary union, time in hospital twenty-one days, result cured.

Case 5.—W. P. Age 26; double acquired inguinal hernia; duration two years; Bassini operation on right side only at patient's request; primary union; time in hospital forty-two days; result cured.

Case 6—Same as above, Bassini operation on left side; primary union; time in hospital forty-one days.

Case 7.—H. F. Age 32; right incomplete inguinal hernia; duration five days; Bassini operation; primary union; time in hospital twenty-two days.

Case 8.—W. W. left inguinal hernia; acquired by fall; duration eight years; Bassini operation; primary union; thirty-six days in hospital; result cured

Case 9.—S. N. Age 47; left oblique inguinal hernia very large; duration twenty-five years; Bassini operation; primary union; time in hospital twenty-three days; result cured.

Case 10.—D. B. Age 23; left oblique inguinal; duration six months; Bassini operation; primary union; time in hospital twenty one days; result cured

Case 11.—R. B. Age 20; right oblique hernia; congenital; Bassini operation; primary union; time in hospital seventeen days; result cured.

Case 12.—O. E. Age 35; left oblique inguinal; duration six months; Bassini operation; primary union; time in hospital eighteen days; result cured.

Case 13.—W. C. Age 57; right oblique inguinal hernia, very large; duration four years; Bassini operation, silk suture and silk ligature; suppuration followed by removal of all sutures. The ligature around the stump left an open sinus for several months, finally coming away the wound closed. Patient's condition after operation bad; finally made good recovery and the hernia was cured. The man was a very fat man with thick abdominal walls and he did not bear the operation very well. Time in hospital four and one-half months; result cured—It was not a very promising case for a successful operation but the patient was tired of trying to retain the hernia with a truss.

Case 14.—J. C. Age 40; ventral hernia following a Halsted operation performed elsewhere. The hernia was just below the anterior superior spinous process; operation, ligature of sac, and deep suturing with chromicized cat gut; primary union; duration in hospital twenty-two days; result cured

Case 15.—J. B. Age 26; double oblique inguinal hernia; duration six and twelve years; Bassini operation, primary union; time in hospital twenty-one days, result cured.

Case 16.—W. H. Age 32; right oblique inguinal hernia; duration two and one half years, Bassini operation; primary union; time in hospital twenty-six days; result cured.

Case 17.—R. C. left oblique hernia; duration four years; Bassini operation, primary union; duration in hospital eighteen days; result cured.

MILITARY HEADGEAR AND ITS RELATION TO THE HEALTH OF THE SOLDIER.

BY HAROLD D. CORBUSIER, B.S., M.D.

LATE CONTRACT SURGEON IN THE UNITED STATES ARMY.

THE question of a proper head covering for the soldier is of vital importance and has always been the subject of much discussion. But it has become of increasing interest to us since our army's service in the Tropics has made more evident the defects, or faults, of our present headgear and the necessity of improvement.

A study of various historic types of military headgear, and of those in present use by several leading countries, as well as experiments and observations which I have been able to make in this subject, have brought out much that may be of interest and of practical use in suggestions for possible improvement in our own equipment.

The idea of usefulness or fitness, to the needs of the soldier, has not always been considered of paramount importance, but has at times been superseded by desire for ornamentation without regard for appropriateness.

The history of the soldier's head covering might be divided into three great periods: first, the period during which usefulness was the dominant feature; second, an ornate period, in which usefulness was sacrificed for appearance and effect to such an extent that officers of the army vied with the ladies of the Court in the elegance of their headdresses; third, a period, which still continues, in which fitness is again considered, and an increasing amount of common sense is displayed. This was recently marked in the United States Army by the discarding of that abortion, the full dress helmet.

Owing to the fact that the headdress is a very conspicuous part of the clothing, and that human nature contains a large lump

of vanity, utility has often been sacrificed for appearance. This fact has heretofore prevented the adoption of a really sensible form of head covering and accounts for the persistent use, by some of the European armies, of excrescences, in the form of helmets, which would find a fitting place only on the vaudeville stage.

It is a conspicuous fact that advancement in the matter of headgear has lagged incomprehensibly behind that of the rest of the clothing, but this might be excused somewhat because the nut was hard to crack.

A brief glance at some of the historical types of military headgear in the British army and in our own may be of interest. In the olden days when fighting men were armed with swords, lances, halberds, and bows and arrows, the need of entire protection was filled by heavy metal armor and helmet.

Although firearms began to supplant bows and arrows, for long distance attacks, during the reign of Edward VI, of England, armor, including helmets, was still necessary because weapons for hand to hand combat were not yet discarded, as they were more effectual than the cumbersome "calivers" which had about as much resemblance to a modern gun as a Chinese "gingall."

The evolution of new arms and of new methods of warfare caused changes in uniform, and, as long distance fighting took the place of hand to hand conflict, the need of heavy armor diminished and in time it was discarded. These changes were, of course, gradual and were not simultaneous in all branches of the army.

The helmet remained in use for some time after metal armor for the body was discarded and in the reign of James I, we find soldiers armed with calivers, who wore no body armor but whose head was protected by a metal head piece called an "iron morion."

In the time of Charles I, after the helmet had begun to be displaced by lighter headgear, the cavalry still retained their metal helmet and continued to do so until the reign of Queen Anne, when some of them were, for the first time, supplied with a cocked felt hat.

It was in the reign of Elizabeth that the first steps were taken toward the laying aside of armor, and this permitted a sumptuousness in uniforms, quite in keeping with the styles of the period. During the time of Charles I, Cavaliers wore a "broad-leaved Flemish beaver hat with a rich hat-band and plume of feathers," the gorgeous "Vandyke dress" being then in fashion.

The helmet was seldom worn by infantry in the reign of James II, its place being taken almost entirely by a broad-brimmed hat with feathers, and Carabineers wore a cocked hat, with, however, an iron skull-cap sewn into the crown.

It is to be regretted that this step forward was not continued as this headgear, if relieved of the feathers and iron, would have been more sensible and comfortable than the creations which came into being during the next few years, especially during the time that the Georges held sway.

It was during the reign of Queen Anne that armor for infantry was completely thrown aside and the cocked hat, turned up on two sides, came into use by both infantry and cavalry, the battle of Ramilies giving name to the peculiar cock of the hat, which was much in vogue.

During the reigns of the Georges the height of the ornate period was reached, also the height of absurdity. Guardsmen and Grenadiers wore a towering affair of German extraction, with whose shape the pictures in school histories have made us familiar. The third George cornered the bear market and introduced that preposterous monster, the bear-skin hat, the genuine or hybrid of which, up to recent times, was worn for full dress by many Drum-majors in our own army. During this period, enormous cocked hats were regulation and the Household Brigade suffered under helmets of polished steel, surmounted by shaggy bear-skin crests.

During this same period, that unsanitary mop, the wig, was in vogue, and, after its disappearance, during the French Revolution, it became the style to curl the hair and apply generous doses of pomade and powder. This custom was carried to excess and, in the words of a writer of the times, "was a preposterous nuisance to both officers and men." In 1808, however, there

was a general shampooing of His Majesty's forces and an order was published, abolishing the regulation requiring the hair to be worn braided in tails.

In 1680 the British army had its first experience in the Tropics and, of course, many ridiculous mistakes were made which, incidentally, have been of great benefit to us since our own army has been on duty in the Tropics. The first British troops who went to India were clothed in the heavy uniforms which they wore at home, and some of their sepoy's wore shakos. This resulted, of course, in both British and Indian soldiers throwing away a great deal of the unbearable uniform. The experience gained then rather overtaxed the sweat glands and "cussing propensities" of the British soldier but he learned many things concerning tropical uniforms which should be enquired into by our own army, as well as by some of the leading European nations.

In 1852. Lieut. Col. Lard wrote, of the British soldier's uniform: "There is scarcely a part of our soldiers' dress, equipment and arms, that does not require alteration. The present heavy cavalry helmet is made so top-heavy by a high plume, that it will with difficulty stay on the head when the troops move at a rapid pace, and they cannot well do the sword exercise when the plume is on it. The lancers' cap is nearly the worst that ever was invented, has the same objection on account of its height and plume and does not in the least protect the back of the head from a blow of the saber. The hussar cap, though made of a good material, has all the prevailing objections that the others have. The present infantry cap is kept on the head with great difficulty, when the men move at double quick, by constantly putting the hand to it, in spite of which it frequently falls off." This last statement is in substance, what was reported recently concerning the new cap of our own service.

Our own army and navy headgear was, at first, a copy of the British, but later some originality was displayed in designing new shapes, although with little regard to hygiene. The American provincial troops serving with the British in the Colonial Wars, had no uniform of any consequence and were probably better off, hygienically, on this account. There were no uniformed compa-

nies at the battle of Bunker Hill but Washington prescribed a uniform for officers shortly after he took command. With this uniform was worn a black cocked hat with various colored cockades to distinguish rank.

A regular uniform was prescribed for the Continental Army by a general order issued in October, 1779, and this order included a cocked hat with cockades, the general officers to wear white or green feathers. In Jefferson's administration, the Infantry were tortured by the use of a stiff, cylindrical head piece, having a three inch brim and a band of bear skin across the crown. In 1799 they were decorated with a white plume and the Cavalry wore a leather helmet surmounted by a black horse-hair plume.

During the war of 1812, many changes were made in the uniform of our troops but experience seems not to have taught the Government much concerning the proper head covering for the men, except, perhaps, the fact that less ornamentation was desirable, and the cocked hats worn by staff officers were without feathers. However this was the exception and the majority of our troops facing the gaily uniformed British, wore a creation which resembled much the present civilian silk hat, decorated with a black silk cockade, a yellow eagle and cut and thrust swords.

In 1868, there was published from the office of the Surgeon General, U.S. Army, "A Medical Report upon the Uniform and Clothing of the Soldiers of the U.S. Army," in which it was stated that the cap then being worn was "objectionable from its size and great weight and want of ventilation, evils that grow in importance with the lowness of the latitude until finally the head is oppressed by a constant, close, vapor-bath." Authority was requested to wear a straw hat in summer, and later such a hat similar to the prevailing civilian form, was worn for a few years. For dress, a cap resembling the present cadet cap was recommended; "for fatigue, a cloth bag cap, such as is worn in the French and Austrain services, admirable for its portability, being transportable in the pocket, and for its adaptation to sleeping and to many fatigue duties; the side flaps may be turned down at

night and in cold weather, but the cap is not suited to the sun in hot climates."

The Scotch or Glengarry cap, with visor, was also recommended, on account of its lightness, its portability, its coolness in summer, its warmth in winter, and its capability of being slept in; a disadvantage lay in not having any means of shielding the neck and sides of the head from sun; a havelock was recommended for use in hot climates to be made of white linen and quilted half an inch thick, to protect the back of the neck and occiput. The report also favored, "for hot stations, a kepi or a casque, or light brimmed hat, essentially the style of the Malay hat." This reference to the Malay hat, nearly forty years ago, is quite interesting to us now in the light of our recent acquisition of a few Malay tribes and the fact that we know their head coverings to be built upon most hygienic principles.

This same report recommends, as by far the most sensible hat, one with which the Second Dragoons were equipped by General Harney in Texas, in 1853. "It was a broad-brimmed, soft felt of pearl or stone color capable of being looped up but with a stiff brim when let down and with an orifice for ventilation on each side of the crown that might be closed at pleasure." The Board further said of it that "it appears to combine all the essentials of protection and comfort and not a few elements of beauty; it is picturesque and soldierly when cocked; it affords the amplest protection from the sun and rain when turned down; it can be laterally flattened for transportation without detriment; cost not to exceed two dollars." This hat was designed by Colonel T. P. Andrews (Paymaster General, retired, then commanding the Voltigeur Regiment) but at the time of this report, 1868, no specimen of the hat could be found.

It is to be regretted that this hat, or something similar to it, was not generally adopted; however the old black felt hat for officers, and the present campaign hat are said to have been evolved from the Andrews hat. It was recommended by many officers stationed in the South-west, where protection from the sun is especially needed, that the Andrews hat be used and the under side of the brim be lined with green material in order to diminish the

excessive glare caused by the reflection of the sun's rays from the alkali plains and other barren stretches. This was a most sensible and practicable suggestion, but again no favorable action was taken by those in authority.

There are other forms of headgear which were worn at various times by our troops, among which we can not forget the low, hard-crowned cap, responsible for so many shiny pates and which was discarded not many years ago. However, enough varieties have been mentioned to show that, until recent times, the prevailing idea has been to decorate the soldier and not necessarily to protect him from the evils arising from wearing a poor headgear. This is a relic of barbarism and a tendency of all peoples in early stages of their development. The same idea is seen in the custom of the Chinese and the American Indians who thought to frighten the enemy by appearing before him in the guise of hideous animals or to overawe him by gay war-paint and feathers.

It would perhaps be interesting to describe fully the helmets and other headgear worn by troops of the various nations at the present time, but few of them have any claim to desirability from a hygienic standpoint; however there are some which I should like to mention. In the German army such helmets as those worn by the Uhlans, Dragoons, Cuirassiers, Pioneers, and Grenadiers of the Guard seem to meet but one requirement, that of a striking appearance, and should be condemned from a hygienic viewpoint, if from none other. The pith helmet worn by the German officers on tropical service is an exception.

The soft Tam o' Shanter worn by the French Zouaves is probably quite adaptable to cold weather, but is absolutely worthless in a hot climate. Little more can be said for the high, heavy cap worn by the infantry and the tall, ill-ventilated cap of the Hussars can be placed in the same category. The French Marines wear a large helmet which is too heavy and is devoid of proper ventilation.

The Italian troops wear nothing in the form of a head covering which would bear imitating, and the same can be said of the Russian and the Austrian soldiers.

Although the Japanese have made wonderful strides, during

the last ten years, in the organization and equipment of their army and navy, they still cling to a form of headgear, which, from our viewpoint, is quite unhygienic, especially for wear in warm weather, as it is constructed of woollen material and lacks greatly sufficient air space and ventilation. It must be remembered, however that the Jap is quite accustomed to going without head covering, this being possible on account of his pigmented skin, which gives him a certain amount of immunity to the actinic rays of the sun. In very hot weather a havelock is often worn with the Japanese cap.

The only forms of headgear worn by the British soldier, which seem to be adapted to the requirements, are the broad-brimmed felt hat, used by some regiments during the Boer War, and the helmet worn during tropical service. In tropical waters the British sailor wears a very good head covering, consisting of a broad-brimmed flexible, straw hat. A hat similar to this is worn by some of the Chinese sailors. The British marines wear a helmet which has many good points, but is too heavy and not properly ventilated.

During service with the China Relief Expedition in 1900-1901, opportunity was afforded for studying various forms of headgear and of making comparisons with our own. Many of the troops which took part in this campaign being from the Tropics, it was interesting to note what they had learned by service in such countries.

The British, although still clinging to some absurd forms of head covering at home, have learned by long experience in the Tropics that the sun's rays are an important factor to be dealt with in the health of troops. It has already been mentioned that an attempt was made by the British Government to place shakos on the heads of their Sepoys, but after the novelty had worn off, and they were put to the test, it was recognized that the natives were much wiser concerning their headdress than their fair-haired conquerors from the North, who were not at all adjusted to such a light country. The Sepoy now wears a pugari which is his native turban, adopted centuries ago as best fitted to protect him from the sun. The uniform pugari differs from the original one

of the natives only in color, being of khaki instead of white.

The English troops in India, requiring much more protection than the native, adopted the helmet for universal wear, the officers of some regiments even wearing the pugari. The pith helmet worn by the British officers, on tropical service, and used now also by German officers under similar conditions, is probably the best form of headgear for garrison wear, which has thus far been adopted by any troops serving in tropical or subtropical regions. More will be said of this helmet in a subsequent paragraph.

An attempt was made by the Germans, during the Boxer campaign, to equip some of their troops with a broad-brimmed straw hat, the brim cocked up on the right side and a chin strap for security, but this was a failure as the hat was constructed of a brittle straw and had another disadvantage, that of being very conspicuous, on account of its light yellow color. The points in favor of this headgear were its lightness, coolness, with a free circulation of air, and cheapness. Soldiers wearing this hat, which represented a long step toward improvement, were in marked contrast to their brothers-in-arms, who sweltered under a metal, spiked helmet which was ill ventilated, heavy and very conspicuous.

The Russian troops wore the full-crowned, white cap which has very few points in its favor as a headgear for general use and the fact that it is so very conspicuous is enough to condemn it entirely. The Cossack black fur cap is a serviceable and comfortable head covering for winter wear, but is also very conspicuous, especially in a snow-covered country, and is quite unsoldierly in appearance.

The Italians wore a heavy white, ill-ventilated helmet, decorated by a tuft of long dark, iridescent coq feathers fastened to the right side. Deprived of the feathers and with other improvements, this helmet could be made a fair head covering for hot countries. It may be, however, all that is desired by the Italian who, owing to his pigmented skin, does not need so much protection from the sun's rays as the fair-skinned American.

The caps worn by the Japanese and by the French, during the Boxer campaign, did not differ from those worn at their home stations and have already been mentioned.

Among the miscellaneous troops, the British Chinese battalion, from Wei-hai-wei, wore a broad-brimmed straw hat which probably met all requirements necessary for dark people. A few natives of Indo-China, enlisted by the French, wore a hideous mortar-board headdress, the principal feature of which was its oddity. The Chinese foreign-trained troops are equipped with a straw hat similar to that worn by the Wei-hai-wei troops just mentioned. Li-Hung-Chang's body-guard wore a thin black turban wrapped closely over the queue, which was coiled about the head. The Chinese regular troops were generally equipped with this turban.

Although we consider ourselves of a higher mental cast than natives of arctic or tropical countries, they follow many principles in the construction of their headgear which we would do well to imitate.

It is a much simpler matter to protect the head and neck from severe cold, than it is to protect it from the severe heat of the sun and the accompanying paralyzing effect of the actinic rays, as in tropical and subtropical climates. The fault with most winter headgear, both civilian and military, is the lack of ventilation and too great pressure upon the venous supply of the scalp.

We are concerned, however, more particularly with a proper head covering for hot climates, as, having no pigmentation of the skin and being out of our natural zone, we have insufficient protection from the injurious effects of the actinic rays of the sun. The need is therefore the greater, to provide proper artificial protection for the entire body, but more particularly for the head and the neck, which are generally the most exposed parts. This subject is ably treated by Major Woodruff in his recent book, "Effects of Tropical Light on White Men."

Even the native of the Tropics, who, owing to his pigmentation, is far less susceptible to the actinic rays of the sun than we of the blond races, wears an extensive head covering, as we

see in the turbans of the Arab and the Indian, and in the broad hats of the Chinaman and the Filipino. All of these headdresses offer two or more of the essentials of comfort for the native: namely, coolness, lightness, shade for the eyes, which, however, the turban disregards, and in the Filipino hat, a dry place in which to store cigarettes and matches.

The essentials required in headgear to be worn in a tropical or subtropical climate, by the blond type of soldier, are as follows: it must be opaque to actinic rays; well ventilated, cool and a nonconductor of heat; light in weight, and should not interfere with the venous supply of the scalp; it must protect the eyes, sides of the head, and nape of the neck; it must be durable; invisible at a distance; soldierly in appearance, and of moderate cost.

So far, we have not been able to combine, satisfactorily, all these essentials in any one form of headgear and it is evident that it would be a difficult matter to construct such a hat without considerable expense. I would like to call attention, however, to the fact that the first two essentials mentioned, opacity to actinic rays, and ventilation, have been almost entirely disregarded in the construction of headgear for troops in general.

In the light of these facts, I am of the opinion that the best solution of the question would be to adopt two forms of headgear for hot countries, one for garrison wear and one for field service, discarding the present white and khaki caps, or permitting them to be worn after sun-down only. For campaign purposes, I would recommend a modification of our present campaign hat, and, for garrison duty, a modification of the pith helmet worn by British and German officers and manufactured by C. C. Dass & Co., Solar Hat Merchants, 74 Radhabazar Street, Calcutta, India.

In an article in the JOURNAL OF THE ASSOCIATION OF MILITARY SURGEONS, Vol. 12, 1903, Major Henry P. Birmingham, U.S.A., recommends the adoption of a helmet for tropical service, as he says, "our heavy felt campaign hat, although generally used by troops in the tropics, has certainly not met the indication." I agree with Major Birmingham concerning the advantages of a helmet, but must take exception to his statement concerning the

"heavy felt campaign hat;" the average weight of this hat is 125 grams, the Stetson weighing 100 grams, and the pith helmet 195 grams. In comparing these weights with the weight of headgear of foreign troops, I find our campaign hat to be the lightest hat worn.

In an article in the JOURNAL OF THE ASSOCIATION OF MILITARY SURGEONS, Vol. 10, 1901, Captain C. E. B. Flagg, Assistant Surgeon, U.S. Army, also recommends the adoption of a helmet for tropical service and states also that "during active operations the cork helmets issued to our troops have been found to have their disadvantages, and the men, if given their choice, will select the soft campaign hat in place of the stiff, cumbersome helmets." Similar statements have often been made by other officers who have had experience with this helmet in the field, which, aside from poor construction, had the disadvantage of being much in the way of overhanging branches and could not be used as a protection to the head during sleep.

One of the most frequent causes of "falling out" during a march in hot climates, is sun-stroke, often mild in degree at first, but increasing in severity with successive attacks, and frequently diagnosed under some other name, such as malaria and apoplexy. I am speaking now of sunstroke, sun-traumatism, or insolation, proper; and not of heat exhaustion, or heat stroke so-called. Sunstroke proper is caused by the effects of the actinic, ultra-violet, rays of the sun upon the insufficiently protected body, and is not to be confused with the symptoms caused by high temperatures alone, from whatever cause. Of course there are many predisposing causes of sun-stroke, but the primary cause is as stated.

The Filipino, owing to the protection afforded by his pigmented skin, can withstand the rays of the sun, say in a temperature of 45°C. (113°F.), better than the fair-skinned United States soldier; but, put both men in the stoke-hold of a ship, say in a temperature of 65°C. (149°F.) and the Filipino will be overcome by the high temperature, while the American can withstand it, showing that the latter is really less susceptible to heat alone than the Filipino whose pigmentation protects him against actinic rays of the sun only.

Hundreds of years ago, the Chinese treated small pox by excluding the irritating rays of sunlight, by causing it to pass through red hangings, and we all know of the more or less successful experiments in this direction lately, based on the work of the late Prof. Neils R. Finsen. As Finsen says, (*Journal of the American Medical Association*, Nov. 14, 1903) to exclude the harmful violet rays, it is necessary to render a room either entirely dark, or permit red light only, but that the same result would no doubt be obtained by the use of dark yellow or dark green curtains. It may seem as if the helmet or the campaign hat were sufficiently dark to exclude the actinic rays, but such is not the case, as we can see by the fact that the skin is acted upon, tanned, by these rays while the hats are being worn. This is particularly noticeable in bald men and blonds who, according to Major Woodruff, and as I have also observed, are seemingly more susceptible to the actinic rays of the sun than a person with heavy or dark hair. We know also that anemic persons are more susceptible than those with a normal amount of hemoglobin.

In connection with this subject, I wish to quote Andrew Duncan, M.D., B.S., F.R.C.S., M.R.C.P., Joint Lecturer on Tropical Medicine at the London School of Tropical Medicine (*British Medical Journal*, Vol 2, 1902): "In August, 1880, I had returned to India in the rudest health after six months sick leave to New Zealand from Cabul. I was sent upon service again immediately but this time on the Candahar line. I reached Sibi in the first week of September. What the temperature must be at this place in July is rightly estimated by the saying of the natives of this part of the country when they wonder why the Supreme Being made hell when Sibi was at hand on earth. * *

"The same week I joined my regiment in the Pislim Valley and the next day took part in a small expedition. * * On returning to camp my head was splitting and I had to be sent at once to the hospital. * * For the next six weeks, however, the racking pain in the head never left me, except at the end of this time in the evening hours. I then was invalided to England but it was not until I got west of Suez that the headaches ceased. After two years sick-leave I returned to India.

* * About March as the hot weather commenced, I was again seized with these distressing headaches, and in the first week of this second onset a temporary attack of hemiplegia occurred. I was invalided to Kashmir for five months.

* * After four months the pains gradually ceased and I returned to duty. Each succeeding hot weather for a series of years severe headaches now regularly tormented me but no definite attack of sunstroke occurred until 1887 when I was again the victim of this affection whilst on leave shooting in the Himalays. Lastly in April 1891 whilst on the Black Mountain expedition my last attack occurred, characterized by the same distressing symptoms—namely, an intolerable headache, etc. For this I had five months sick-leave to the hills but, on returning to duty in the plains, I was again knocked over by the sun, and had to take two years leave to England. Shortly after my return to duty I fortunately read a letter in the *Pioneer* newspaper, written by an executive engineer. This officer had suffered on several occasions from sunstroke. Reasoning from the fact that no one gets heat-stroke from the great heat of furnaces in an arsenal, he came to the conclusion that the heat rays of the sun were not the *fons et origo mali*, but the actinic rays. Hence he treated his body like a photographer treats his plates and enveloped it in orange, using always an orange-yellow shirt, and lining his coat and hat with flannel of the same color. During the subsequent five years of extreme exposure he suffered from no bad effects of the sun. Acting on this hint, whenever I had to perform a march in hot weather I always used an orange-yellow shirt; I lined my helmet with orange-yellow flannel and had a pad of the same color stitched into my khaki coat down the back. I, too, never again in consequence, felt the effect of the sun. I would, therefore, submit that the dangerous rays of the sun are the actinic, and as a means of protection from sunstroke I would advocate the use of such means as I have indicated. As a further precaution, the helmet might be lined with a layer of tin foil.”

During service in the Philippines I had an experience which has influenced me to agree with the theory of Dr. Duncan. After considerable exposure to the direct rays of the sun, severe head-

aches occurred until one day I wore a khaki cap lined with orange-yellow silk and noticed that I did not suffer from headache. I then did a little experimenting with this cap and my campaign hat, which I had been in the custom of wearing when in the sun, and found that whenever I returned to the latter the headaches would recur with more or less intensity. The same immunity could be procured by placing the orange cap-lining in the campaign hat, but I did not continue this as the lining was not made for the campaign hat and I had no means of fastening it there readily. I have since heard that Europeans in Egypt often wear a jean skullcap under the helmet and that it is said to lessen the penetration of the rays of the sun. I do not know, however, what color this skullcap is.

It is stated by Dr. Angelo Sandrini (Policlinico, Sezione Pratica, 1901-1902), that heatstroke, probably meaning sunstroke proper, shows itself with greater frequency and severity on the sea than on the continent, the number of cases among marines standing to that of land troops, in the ratio of four to one. If this is the case, particular care should be taken in the construction of headgear for marines and sailors in rendering it impervious to actinic rays.

In the light of these facts and knowing the scalp and skull to be very susceptible to penetration of actinic rays, and that these rays have a markedly injurious action upon the circulation, brain and spinal cord, we should naturally construct our campaign hat and helmet so as to exclude the ultra-violet rays. For this purpose I recommend a strong China silk lining of a red or orange color. Tinfoil was suggested by Dr. Duncan for the same purpose but being a good conductor of heat and absolutely airtight, I would not recommend its use. Flannel has been used also as a hat lining but this has a tendency to retain heat and moisture and acts as a poultice. Silk is light, not bulky, a non-conductor of heat and can be dried quickly when wet. Manson suggests as a sun-hat, "a wide-brimmed pith hat, protecting the temples and neck as well as the top of the head. This hat should be lined with some colored [orange, Duncan] material and so constructed as to admit of free ventilation around the head."

He also speaks favorably of a sheet of tinfoil, but neither he nor Duncan says that this has ever been tried. Quoting further, Manson says, "a white umbrella lined with green or orange ought never to be despised."

The question of *ventilation* is a very important one as excessive heat and the non-evaporation of much perspiration act as a poultice causing baldness and also rendering the individual more susceptible to the action of the ultra-violet rays. As previously alluded to, headgear in general is woefully lacking in provision for free circulation of air and hence in coolness. The cap worn by the Japanese troops being made of heavy woolen material, poorly constructed and ill-ventilated, must manifestly be hot, yet I have found the same temperature in a campaign hat and in a Stetson when creased deeply, as frequently worn. This was 43.3° C. (110° F.), 6.3° C. (11.6° F.) above the body temperature and only 3.1° C. (6.5° F.) below the temperature in the sun, which was 46.4° C. (116.5° F.), at the time of my experiment. The moisture from perspiration in these cases was considerable. The temperature in the shade at this time was 29.4° C. (85° F.), 13.9° C. (25° F.) below that under the hats. The campaign and Stetson hats worn not creased were found to generate a temperature of 42.4° C. (108.4° F.) and 40.1° C. (104.2° F.) respectively, the temperature in the sun being as previously stated; moisture about the same as before. The hats, when worn slightly creased, and ventilated in front and behind through openings three-quarters of an inch in diameter, gave the following: campaign hat, 40.1° C. (104.2° F.), Stetson, 39.1° C. (102.5° F.) being respectively 2.3° C. (4.2° F.) and 1° C. (1.7° F.) lower than in the hats when not ventilated as indicated; much less moisture. The U. S. khaki cap, lined with orange-yellow silk, gave 41.06° C. (107° F.) and the white cap, 40.27° C. (104.5° F.); moisture moderate. Both these temperatures are less than under the campaign hat, even when uncreased, probably because the silk in the caps acted as a non-conductor. It is interesting to note that the temperature under the white cap was .8° C. (2.5° F.) lower than that under the khaki cap, of the same construction, differing only in color. This is in accordance with

experiments made at Aldershot several years ago when it was found that white absorbed less heat from the direct rays of the sun than any other color.

Temperatures found under other headgear used in the Tropics, tested under the same atmospheric conditions, were as follows: German private's helmet, 42.5° C. (108.5° F.); French private's helmet, 42.3° C. (108.2° F.); British private's helmet, 41.3° C. (106.4° F.); French cap, 42.8° C. (109° F.); pith helmet of British and German officers, 39° C (102.2° F). The last is the lowest temperature found under any examined; also there was the least amount of moisture under this helmet. On ventilating this helmet in front and behind, the temperature was found to vary from 37.8° C. (100° F.) to 38.1° C. (100.6° F.), which again proves the importance of free ventilation. All the temperatures under headgear were taken by suspending a thermometer in the crown of the hat, placed on the head of a soldier, who walked about in the direct rays of the sun for not less than one-half hour for each experiment. Several thermometers were used and when they varied the average was taken. The temperature of the subject was also taken, as was that of the atmosphere both in the direct rays of the sun and in the shade.

I recommend that all headgear for summer and tropical wear be ventilated by means of openings, protected by fine non-rustable wire gauze, and not less than three-quarters of an inch in diameter, placed, one directly in front and the other opposite, on the hat, cap, or helmet. Side openings might be made also but should be larger than those in the old campaign hat; however they are of little benefit without a means in front for the entrance of air, which is set in circulation by the motion of the person.

As is generally conceded, headgear should be light in weight, but in addition to this, it should be constructed so as not to constrict the scalp and interfere with circulation, thus rendering the part more susceptible to the ultra-violet rays, since it is well known that the effect of these rays is directly proportionate to the degree of their absorption, being more readily absorbed in an area partly deprived of blood than where the circulation is normal.

The lightest forms of headgear that I could find were the old white or khaki cap, the Stetson and the pith helmet, weighing 100, 125 and 195 grams respectively. Other forms of helmets weighed much more, for instance the German private's helmet was 403 grams, which is entirely too heavy.

The next matter of consequence is that the head piece should *protect* the eyes, the sides of the head and the nape of the neck. Both the campaign hat and the pith helmet do this sufficiently. The latter has a front visor two and one-half inches long, with a drop of thirty-five degrees, the back visor being three and one-half inches long, with a drop of forty-five degrees and turning slightly toward the horizontal at the end. The sides of the pith helmet are one and one-eighth inches wide, with a drop of twenty-five degrees. The visors are lined with green cloth.

Durability is another essential in a headgear; that for the field must necessarily be stronger than one worn in garrison only. The campaign hat has been fairly durable, but many issues were found to be constructed of very poor felt which soon wore where creased. The Stetson is an excellent quality of felt, as it is firm and can be crushed, without breaking. The last issue of campaign hats is too stiff, especially the brim, rendering it easily broken and not comfortable to sleep in. Of course it is necessary that a headgear should shed rain and this point is well provided for in our campaign hat and in the pith helmet, when properly covered.

Invisibility at a distance, is now, since the introduction of modern ordnance, a very important requirement, and the soldier's head must be as invisible as his body, when clothed in the new olive-drab uniform. I was greatly impressed with the importance of this fact during the maneuvers of the Shanghai Volunteers, in the spring of 1902. All these troops, except the German contingent, were equipped with an excellent olive-drab uniform, the color of which blended perfectly with the surroundings; but the British battalion with this uniform wore the small dark blue cap, without visor, used by their regular troops for fatigue wear, and could readily be distinguished at a distance by the Indian troops against whom they were defending the town.

Some issues of our campaign hat have been quite indistinguishable at a distance, but the present issue approaches too nearly a slate-gray, for use in all conditions of country. The shade of the Stetson more nearly approaches the ideal color, which in fact, must not be any one distinct color, but a blending of yellow ochre and olive shades. Of course the helmet, if for garrison wear, need not be indistinguishable, but should be covered with white, having a khaki cover which could be slipped on when desired.

Another requisite of an ideal military headgear, is that it should be *soldierly* in appearance. The campaign hat, when new, is very "smart" in appearance and, if cared for properly, will remain so for some time, but, during a hard campaign, it certainly is very likely to become dilapidated, although serving most purposes even then. However, it is not essential that a hat for campaign wear look strictly soldierly if this point must be gained at the expense of more important features, and the campaign hat should not be ruled out for failing, in a degree, in this respect.

Although many wails have gone up from American officers against the so-called unsoldierly appearance of the helmet, I insist that, if properly constructed, it is as soldierly as any headgear that is worn, except the new cap of our service. Many of us have been disgusted with the appearance of helmets on account of the creations that the United States Government has endeavored to inflict upon some of our troops. These "sweat-boxes" contained a coarse felt and cork; were devoid of proper ventilation, and their shape reminded one of a camp kettle turned upside down. They were short-lived but existed long enough to establish a prejudice against the helmet as a type. The shape of the white helmets worn by the British troops in Hong-Kong and in India is as soldierly and pleasing in effect as could be desired and we would do well to copy this pattern.

The *cost* of a headgear should be considered well, but the tendency is to economize too much on this important part of a soldier's equipment. It is much less expensive to furnish him with a first class head covering than it is to pay for the many expenses incident to his invaliding, and perhaps pensioning, from

the effects of the sun. The new issue campaign hat costs the individual about two dollars, and the pith helmet can be purchased, at retail, for two dollars and a half.

Another point which must be considered in equipping troops with a head covering, is *similarity* between the hat of officers and that of the men. They should be so nearly alike as not to be distinguished from a distance, yet some marks of distinction which could be seen at close range, should be used. This principle is admirably carried out in the campaign hat and the new caps. The importance of similarity between the dress of officers and of the men has often been brought into evidence by experiences during our own Indian campaigns in the West, and from similar experiences of the British in India. In an article by Lieutenant Colonel C. H. Powell, First Goorkha Rifles, (*Blackwood's Magazine*, December, 1899), it is stated that the high casualty list among officers in the Indian Frontier campaigns of 1897-98, caused some regiments to discard the officer's helmet and replace it with a turban similar to the one worn by the men.

To recapitulate—I would recommend for garrison wear in hot climates, the pith helmet, to have included in its construction the following important points: a lining of orange-red silk; ventilation before and behind, also around the band; a space in the band at points where the large veins of the scalp would otherwise be constricted; sufficient visors before and behind and at the sides, to protect the eyes, head and neck; white in color, with an extra khaki cover; shape of dome similar to that of the British white helmet and not over five inches deep; provided with a chin strap for security, the band, or base, to be blocked in an ellipse, rather than a circle.

For *field* purposes, in hot and temperate climates alike, I would recommend a campaign hat, of the general shape and dimensions now in use, but with the following points observed: constructed of a flexible, soft felt; lined with orange-red silk; ventilated in front and behind; more invisible in color; with a thin leather sweat band next the hat and a coarsely woven cotton band over this, next the head, so laced in as to be removable for washing when soiled; to be secured by a cord, passing under the

band in front, then to the under side of the brim, through eyelets at the temporal regions so that it can be pulled down over the occiput, and varied in length; to have a thin band of colored material for distinguishing the arm of the service, instead of the cord in present use.

The other headgear now in use by our troops in temperate regions is greatly in advance of anything used by us in warm climates, but the disregard of proper ventilation is again open to criticism and responsible for baldness and headaches. The new cap should be ventilated before and behind, as indicated for other forms of headgear. The shape should be, not a circle, but an ellipse, which is the form of the contour of the vast majority of heads. Examining the conforms of 572 heads, I found only thirty-six which approached the circle, the remaining 536 being elliptical or oval. Being circular, the cap, when placed upon an ellipse, the head is drawn tightly, constricting the forehead and occipital region, leaving spaces at the sides between the head and sweat-band. This is not only very uncomfortable but causes the top of the cap to spring out of shape. This fault is responsible for the falling off of so many caps during drill, as recently commented upon by an inspector. The cap should be so constructed as to conform to the contour of the head and press no more at one point than at another.

As previously mentioned, it is easier to protect the head from cold than from the rays of the sun, and our muskrat fur cap is quite well adapted to winter wear. However, the neck band should be wider in order to come down well over the neck all around. It may be of interest to mention that the temperature under both the regulation fur cap, and the campaign hat was the same, 10° C. (50° F.), when the temperature of the air was 2.8° C. (5° F.).

This is not so complete a presentation of the subject as I should like to make, as my experiments in the Tropics were terminated sooner than I wished. However, there is more to be learned and it is hoped that experimentation in this direction will be continued in order to emphasize the great importance of a proper headgear for our troops, especially in hot countries, where the rays of the sun are so injurious to the health of the men.

JAMES MARKHAM MARSHALL AMBLER.

BY JOHN CROPPER WISE, M.D.,

MEDICAL DIRECTOR IN THE UNITED STATES NAVY.

THE propositus of the distinguished family of Ambler in Virginia, was Richard, who migrated from Yorkshire, England, being the son of John Ambler, who was Sheriff of York in 1721.

The names of York, Leeds, and Wakefield in Virginia, were given by this family, and those of Fairfax and Washington, in loving memory of their homes in England.

Richard Ambler, the settler, married Elizabeth Jacqueline, of Jamestown, Virginia. The father of Elizabeth Jacqueline, was Edward, son of John, and Elizabeth Craddock of Kent, England. John Jacqueline was descended from the same stock, which gave rise to the noble family of La Roche Jacqueline, in France, which was Protestant, and fled from La Vendee during the reign of the infamous Charles IX a short time before the massacre of Saint Bartholemew. These refugees were eminently wealthy, and converted much of their estate into gold and silver, which they carried to England.

The sons of Richard Ambler and Elizabeth Jacqueline were, John, Edward, and Jacqueline. John, with his brother Edward, was sent to England, to attend school at Cambridge; he studied law, and became a learned and accomplished barrister. After travelling in Europe he returned to Virginia and took possession of Jamestown an estate given him by his grandfather Jacqueline. He was a great linguist, and devoted to literature, many of his books in different languages being extant. He died at Barbadoes in 1766.

Jacqueline Ambler, brother of John, was both Councillor of State, and Treasurer of Virginia. He was a man of high honor, and distinguished ability, being known for his scrupulous integ-

rity, as the "Aristides of Virginia." Edward Ambler, like his eldest brother, graduated with honor at the University of Cambridge. Returning to Virginia when in his twenty-first year, he married Mary Cary, daughter of Wilson Cary, of Ceeleys, Elizabeth City County, Virginia. Bishop Meade states that Edward Ambler was a man of such consideration in Virginia, that when Lord Botetout came out, he brought letters of introduction to him. From this gentleman descended, Dr. Richard Cary Ambler, of "The Dell," Fauquier County, Virginia, who was the father of the subject of this sketch. Dr. Richard Ambler was educated abroad, and is represented as a man of fine literary, and philosophical tastes; he married Susan Marshall, a niece of the Chief-Justice, and a grand-daughter of Robert Morris, the financier of the Revolution. Of such noted parentage and descent, James Markham Marshall Ambler, was born in Fauquier County, Virginia, December, 1848. He was one of several brothers who survive him. Dr. Ambler, received his earlier education at the local schools, attending later Washington and Lee University at Lexington. He studied medicine, and graduated from the University of Maryland, being commissioned an Assistant Surgeon in the Navy in April, 1874. He served on the *Mayflower* and *Kansas*, North Atlantic fleet 1874-75, and Training Ship *Minnesota* 1875-77, and in this year was promoted Passed Assistant Surgeon. At the time of his orders to the Arctic Steamer *Jeannette*, Dr. Ambler was serving at the Naval Hospital, Norfolk, Virginia. He was due for sea-service, and was in expectation of a detail to the flag-ship of the Mediterranean Squadron, when he was "requested" by the Navy Department to volunteer for the Arctic expedition, patronized by Mr. Bennett and commanded by Lieutenant DeLong, U.S.N.

Ambler was in every way fitted for the unusual duty he had accepted. He was unmarried, and in the fullest sense of the word, a worthy descendant of the many distinguished families from which he came. Born and reared in the invigorating climate of Piedmont, Virginia, he was blessed with strong health, and possessed a fine physique, being tall, broad-shouldered, and well proportioned. He was a man of commanding appearance,

and happily combined dignity of manner with an admirable courtesy. It has been said that the education of the Virginia boy consists in "learning to ride, shoot, and tell the truth"—we well know that this man carried his honor so high, that the most terrible vicissitudes, left it fair and untarnished.

While we must admire the long line of men, who evinced the same high sense of honor and courage which characterized our subject, we cannot read the record aright, if we fail to notice, the unusually strong character of his mother, Susan Marshall, who is shown to have possessed a fine mind, and eminent qualities. That the son profited by her care and inherited these gifts, we cannot doubt, when we read the letter, written by the son to his brother, when the former lies frozen and perishing at the mouth of the great Arctic river. He speaks thus of his mother, how "his heart has been bound to her since his earliest years," and we then also know, whence came the strong, and full confession of Christian faith which closed the noble life of her son.



The Ambler Arms.

The Jeannette Arctic Expedition, under the patronage of Mr. James Gordon Bennett, was commanded by Lieutenant De Long, a very able officer, and associated with him were Lieutenants Chipp and Danenhower, Passed Assistant Surgeon Ambler, Chief Engineer George Melville, U.S.N., Mr. Collins, as scientist, and Captain Dunbar, an experienced ice-pilot. Sailing from San Francisco on the 8th of July, 1879, the *Jeannette* passed Behring Strait, and directed her course to the north-west. Meeting the ice pack early in the year the ship boldly plunged into it, and on the 6th of September was solidly frozen in. The question has

been asked why the ship was entered in the ice-pack. To which query, Melville makes the very pertinent reply, "She was an Arctic ship, bound on a polar voyage, and could not be expected to attain the Pole, without encountering ice." From the date of entering the pack until June, 1881, the ship was an absolute prisoner, as were her officers and crew, if we except the forays in search of game, and Melville's journey to and planting the flag on Henrietta island, which was accomplished under great difficulties. Melville in his honest, terse English, tells us of De Long and Ambler coming out some distance to "pick him up," and continuing says: "And the Doctor, generous soul that he was, inquiring first of the health of the party, said in his hearty way, 'old man, I am glad you have had the opportunity of first unfurling our flag with honor.' " This period when the *Jeannette* was in the pack, was a time of lasting anxiety. The ice gripped the ship so as to squeeze the oakum from the seams, while towering bergs overhung and threatened momentarily to crush her. From the first all had been made ready to abandon the ship at a moment's notice, and under this strain, life went on for months. Yet the story of this life is not a dark one; all hands exercised regularly and discipline of a strict character was rigorously maintained, nor was the scientific purpose lost sight of for a moment; through floes and leads the sea was dragged for specimens, the library was read and re-read, and in the cabin the evenings were passed in scientific discussion. During this period of imprisonment, Melville was devising improved pumps to keep the ship afloat. No point connected with the safety of his ship's company and the purpose of the expedition escaped De Long's alert mind.

Ambler's studies on the laws of morphology and crystalization in snow, conducted as they were, not only excite our scientific interest, but they command our admiration, just as do the thermometric observations of Larrey taken during the retreat of the Grand Army through Russia.

The medical officer is shown to have been on the alert for scurvy, the bane of Arctic explorers, yet greatly to the credit of the expedition, not a well authenticated case occurred. De Long's active mind extended to this branch of polar exploration, involving

as he knew, the success of his project, and today in the archives of the Navy Department is a careful study of this malady, which is in itself a monument to the learning and industry of its author. We must attribute this immunity of the *Jeannette's* company in this regard, to the abundance of canned provisions, and the great care to furnish potable water—that from melting snow not being used, except on the retreat. But in lieu of scurvy, another class of diseases occurred; digestive troubles in various forms, cramps, constipation, diarrhoea and dysentery.

Ambler by analysis proved these to be due to lead poisoning from the soldered cans; several of the crew were much weakened in this way, and had to be transported over the ice, on the long journey to the Lena. When we read the journal kept by Ambler, not only on this ship, but on the ice, we are at once aware that his duties were no sinecure. His own health too was impaired by the strain and unnatural conditions so long borne. Ere the retreat commenced, in entering his daily record, he says, "I am passing bloody stools today."

The retreat of De Long's party over the arctic ice to the mouth of the Lena river, for the indomitable courage displayed, for the discipline preserved, for the cheerful discharge of duty, stands today without a parallel. When the ship sunk, she was abandoned with perfect order, every detail being perfected long before. The ship's company camped upon the ice, in sight of the ship, but their brave hearts did not go down with her. Their situation was most lamentable, their health had already been sorely tried, when they were called upon for almost superhuman effort. Lieutenant Chipp was so ill as to require great care, and upon him Ambler bestowed the greatest attention. Lieutenant Danenhower's eyes had failed, and he was an additional burden—with a sick list and a limited supply of provisions, they must walk five hundred miles, over a road cut through the ice, or across bergs that treacherously parted beneath their feet. Yet from all accounts, these men accepted the inevitable cheerfully, and their diaries are full of jokes and banter. Ambler's great longing Melville tells us, was to renew his "electrical connection with the earth."

In addition to the transportation of the sick, and hospital supplies, tents, etc., Ambler was made road-master, and put in charge of bridging and rafting, the difficulties of which increased so, that finally it required the efforts of all hands to advance one piece, and as the three heavy boats they must carry, with which to meet the open waters to the South, added to provisions, etc., required thirteen teams, every mile they made over the ice was traversed thirteen times!!

We wonder how this band of men, could ever have continued in an effort, apparently so hopeless, with a very limited diet and few hours of undisturbed sleep. Often the floes on which they encamped would part in many pieces, carrying men, provisions, dogs and equipage in as many directions; the labor, danger and anxiety, under such circumstances, was enough to crush the most indefatigable; even at night the ice cracked and parted beneath them, those sleeping in the middle of the rubber sheet being saved by the weight of those at the ends. But a still more appalling fact was yet to face this hardy band, advancing thirteen miles for one, and this was the discovery of a drift of twenty-six miles to the Northward!!

De Long imparted the information to but few of his command. Shoving and pulling their boats through snow-drifts waist deep, or dragging them over roughest ice—they could keep little on their feet, the hide shoes which they made quickly cutting to pieces.

Ambler tells us in his journal of his repeated passage and repassing, over the day's advance, and on one occasion being so late and seeing so badly, when going to bring up the rear, composed of the sick, falling in water to his neck, and nearly drowning.

Yet amid all we perceive a high spirit and admirable discipline, duties were as distinct, stations and quarters as surely indicated, as on ship-board, while on Sundays, they never failed to read the act for the better government of the Navy.

The Medical Journal is kept with remarkable regularity and neatness, while we wonder at the ink's not freezing, or how the

medical officer could hold a pen. Day in and day out, the condition of his sick, the care of his stores, the progress of his party, all are noted, in clear and concise style.

Setting foot on land for the first time in two years, they at last obtained a little rest, on Bennett Island, where poor Jack's wail was, "on shore with two year's pay and nowhere to spend it."

Winter set in during August, accompanied by terrific gales and as most of the journey was now in boats, these half-starved



The Last Camp.

The frozen remains of the party were found at the point, where the two figures appear, in the center of the picture.

creatures, were so often wet, as to be nearly frozen to the thwarts upon which they sat. From August 6th to September 16th, the period between leaving Bennett Island, to the time of Melville's entering the Lena river, six tents and their occupants were doubled up in three boats, and existence was one unending battle with the ice and the tempest. On reaching the coast, the three boats separated in a Northeast gale. That commanded by Lieutenant Chipp was never again heard from—Melville, in the whale-boat, which proved the most worthy craft, after incredible

hardships, landed in the river and crawled ashore with his men. De Long's boat which also carried Ambler, struck the river at one of its termini, well to the westward of Cape Barkin, to which the loss of his party was largely due, as the river with its multitudinous divisions, and subdivisions, made traveling to a strong, well-nourished man difficult, but De Long's party was feeble, and with no authentic map, and its fate hopeless from the first. From the time of landing, September 17th to October 11th, the little remnant struggled on, cheered by the indomitable courage of De Long. Ambler still husbanded his stores, and issued alcohol by the ounce and glycerine by the drachm. He was overburdened with his helpless comrades, and to them he still maintained his ministrations, still daily wrote his journal, which remains today in the archives of the Bureau of Medicine and Surgery, a monument to his professional devotion. De Long decided in his extremity to send two men in advance to seek assistance.

Ambler writes in his journal, 9th October, 1881, "The Captain gave me the option of going ahead, but I thought my duty required me with him and the main body for the present," and later he cheerfully adds, "Ninderman and Noros are ahead, God give them aid, and we are getting on." October 12, 1881, is the last record, "We have been without food since Sunday, except alcohol an ounce, glycerine a drachm, yesterday, and lying in hollows on the river bank." We cannot contemplate the suffering of this company between this date in Dr. Ambler's journal, and the date of his last words, written October 20th, 1881, to his brother Edward Ambler, Esq., Markham P. O., Fauquier County, Virginia, without a feeling of deepest sorrow. He says in part:

"I write these lines in the faint hope, that by God's providence they may reach you all at home, I have now for myself little hope of surviving. We have been without food nearly two weeks, with the exception of four ptarmigan among eleven of us. * * We can barely manage to get wood enough to keep warm and in a day or two that will be passed. If it had been God's will for me to have seen you all again, I had hoped to have enjoyed the peace of home living once more. My mother knows how my heart has been bound to hers since my earliest years.



The Tablet in the Naval Medical School.
The Central Medallion is an excellent portrait of Dr. Ambler.

God bless her on earth, and prolong her life in peace and comfort. May His blessing rest upon you all. As for myself, I am resigned, and bow myself in submission to the Divine will. To all my friends and relatives a long farewell. God in his infinite mercy grant that these lines may reach you. I write them in full faith and confidence in the help of our Lord Jesus Christ."

Melville who found the bodies, tells us Ambler was the survivor.

The remains were returned to the United States, those of Ambler being deposited in the church yard at Markham, under the shadow of the Blue Ridge, where he was born and had passed his early years. Both in the church and at the Naval Medical school his brother officers have erected tablets to his memory with the legend,

"Love of duty stronger than love of life."

There is such high purpose, such moral greatness, in the record of a life such as this, as to make it worthy the best examples and brightest days of chivalry.

PHYSICAL QUALIFICATIONS OF ITALIAN DIVERS.

SUPPLEMENTARY to Lieutenant Colonel Abbamondi's valuable paper the causes of accidents to divers the following

Regulations on the Physical qualifications required for Divers in the Royal Italian Navy will be of interest: Divers must be very strong and healthy, therefore those are to be excluded who have: (1.) A thoracic perimeter less than 0.90 cm., and a stature over 1.75 m. (2.) Neck short and thick with swelled veins. (3.) Circulatory and respiratory organs not perfectly sound. (4.) Diseases, though very light, of the nose, pharynx and larynx. (5.) Diseases, though incipient, of the skin, ear and sight. (6.) Syphilitic and rheumatic persons are excluded; such as have a tendency to plethora, congestions and hemorrhages; such as have suffered even in their childhood from convulsions; those who are subject to headache; and drunken men.

Contemporary Comment.

A DANISH VIEW OF THE RUSSIAN ARMY MEDICAL WORK IN MANCHURIA.

CAPTAIN Daniel Braun of the Danish Infantry furnishes the *Militarlaegen* an account of the military medical services of the Russian forces in Manchuria. Attached to the staff of General Kuropatkin, in addition to Dr. Wreden the Chief Surgeon of the Army, was General Trepoff, a line officer, who was "in command" of the Medical Corps. His forces were divided into two departments, the Medical Corps proper and the Red Cross. The administrators of the Medical Corps were a medical field inspector, a chief surgeon, a corps physician and a corps surgeon for each Army Corps, and a division medical officer for each division. Each infantry regiment had a chief medical officer and four assistants. Each division had two mobile field hospitals and two permanent or reserve field hospitals, each comprising two hundred beds. The medical personnel of each regiment consisted of five medical officers, one apothecary, thirty-one attendants and thirty-two bearers for the patients, and material for a field hospital comprising sixteen beds, which formed the first aid station immediately in rear of the line of battle. The division hospitals were supplied with five medical officers, seventeen non-commissioned officers and twenty-seven ambulances.

The medical officers were civilians and had no right of initiative, as not they but line officers were responsible for their conduct. They were therefore often indifferent and did no more than they were required to do. The number of medical officers was too small and a great many of them were young men without practical experience. They were not assigned to duty according to their ability, surgeons being placed on duty in medical wards and experienced sanitarians in the surgical services. The

sanitary material, even at the time of mobilization, was very defective, and during the hostilities it became constantly worse.

The Red Cross, as distinguished from the Medical Corps of the Army, defraying all its own expenses, did good service without such interference from the line. The function of the Red Cross as an assistant to the regular medical service of the Army was merely a moral one, and its personnel could not be forced to obedience. The departments of the Red Cross service comprised:

1. Flying columns, which approached as near as possible to the firing line to render first aid.
2. Mobile field hospitals.
3. Permanent field hospitals (*etape-lazarets*) with two to three hundred beds.
4. Hospital trains and vessels.

The Red Cross established eating stations where good meat was to be had for the soldiers at a reasonable price, and organized disinfection corps. After a time all the evacuation departments came to rely upon the Red Cross, two-thirds of the sanitary work being in its hands at the end of hostilities. There was much feeling upon the part of the military medical officers toward the officials of the Red Cross, who were so much more favorably situated than they, a fact which militated greatly against the service of sanitation and succor.

The flying columns took a very prominent part in the sanitary services at the front. In the summer of 1904, fifteen flying columns were actively working. They consisted as a rule of two to four medical men with their assistants, medical students and sanitary soldiers, with less frequently female attendants; and material for the establishment of dressing stations, transported either in carriages or on horseback. The smallest columns were the more easily movable and of the greatest use. The conditions during the work at a dressing station during the battle of Vafangkou is described as follows:

"We were forced to throw away all our convictions as to antiseptic and septic methods. Perspiring and covered with dust, we dismounted and began to work at once. When our fingers became too sticky from blood, we wiped them off with a tuft of

wadding as well as it was possible to do. Water could hardly be found. It was to be procured only at the greatest risk of life."

Many wounded at Vafangkou did not receive a preliminary dressing before they were taken into the train. The position of the columns was at the beginning of the battle close behind the artillery, but during the retreat they were thrown close behind the infantry where they were highly exposed. Regimental aid stations were not established during this battle. The wounded were sent to the columns or direct to division aid stations.

Captain Braun gives a sympathetic and even enthusiastic description of the work of the Red Cross sisters, praising them not only for their remarkable humanity, but for the technical sanitary dexterity which they evinced. He believes that the female attendants are deserving of far more consideration than is ordinarily given them, and reprobates most strongly the "malicious tattle" which has gone forth with regard to their morals, for during his service in Manchuria, he never saw anything of an objectionable kind.

He observes that the destiny of a wounded man is today considered settled during the first three days and quotes the remark of one of the foreign medical officers in the Russian Army that they who survive that period are as a rule curable. The most dangerous zone of fire is between the firing point and 400 meters. Beyond this distance the injurious action very rapidly decreases. The zone of 400 to 600 meters is the least dangerous as the projectiles pass directly through the bones and soft parts without explosive action. Von Manteuffel considered these circumstances as continuing up to 1,600 meters, while Wreden thought that wounds were already more dangerous at a distance of 800 meters, since the projectiles have a less regular movement at this distance, and that at a distance of about 1,000 meters the projectiles are occasionally stopped in the body. Both of them agreed however that ordinarily a distance of 2,000 meters is reached before the projectiles stop in the body.—HANS DAAE.

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Editorial Expression.

THE METHOD OF SPREAD OF TYPHOID FEVER.

IN the March, 1906, number of the *Journal of the Royal United Service Institution* there is a report of a lecture before that body by H. E. Leigh Canney, Esq., M.D., on "The Toleration of Enteric Fever by the Army."

The suggestions which Dr. Leigh Canney makes for the control of typhoid fever in the army are in the main excellent, but he makes certain statements with regard to the method of spread of the disease which are not sustained by American experience, nor by the more recent views of prominent epidemiologists abroad.

The statements to which I wish particularly to take exception are the following:

"To estimate the potency of any particular avenue of typhoid to man, it is essential that all other avenues must be rigidly closed at the time. Without this all conclusions drawn from such observations are mere assumptions, and valueless as data. For this reason attempts to indicate the special avenue of enteric in some vast military camps (Bloemfontein, Kroonstad, the United States of America Volunteer camps) absolutely destitute of any organized plan of sanitation and equally devoid of any means of dealing with the epidemics—every avenue of the bacillus being left unguarded—are valueless. If the water and liquid avenues to a camp or community are protected, epidemics will not occur, the disease disappearing after a diminishing series of sporadic cases if duly isolated."

Now if there is any one thing that the typhoid fever board did demonstrate it was that "infected water was not an important factor in the spread of typhoid fever in the national encampments of 1898" (Conclusion 26).

In support of this conclusion it was shown that typhoid fever which prevailed among the regiments at Chickamauga where part of the water supply was infected continued to spread among the

regiments after removal to Knoxville, Tennessee, and Lexington, Kentucky, where the water supply was above suspicion.

"That the water was not infected at Jacksonville seems to be beyond question. This supply came from artesian wells more than 1,000 feet deep, and was distributed through the camps by means of pipes. In August and September of 1898 there were in round numbers at Jacksonville 30,000 civilians or inhabitants of the city and the same number of soldiers encamped near by. Both civilians and soldiers drank water from the same source. There were only a few sporadic cases of typhoid fever in the city at a time when each of the three division hospitals was receiving a score or more of patients with this disease each day. The same condition existed at Knoxville. Here the soldiers obtained their water supply from the pipes that furnished West Knoxville. We satisfied ourselves from an inspection of the health officer's books that there were no cases of typhoid fever among the citizens at that time, and still there were hundreds of cases among the soldiers."

Again in Conclusion 30 the board states:

"(30) Typhoid fever, as it developed in the regimental organizations, was characterized by a series of company epidemics, each one having more or less perfectly its own individual characteristics.

The truth of this statement will be evident after the inspection of the charts showing the distribution of typhoid fever among the companies of the different regiments. On making such an inspection, one must be impressed with the fact so plainly evident there that men who are closely associated develop typhoid fever simultaneously. Men in the same company came down with the disease on the same day. This is still more marked when we study the cases with reference to the tents occupied by the men. Of 1,608 cases of typhoid fever which we have been able to accurately locate in the particular tents in which they occurred, together with the date of commencement of the attack, the results may be summarized as follows:

Directly connectable attacks, 563, or 35.01 per cent.

Indirectly connectable attacks, 447 or 27.79 per cent.

Total connectable attacks, 1,010, or 62.80 per cent.

Certain tents were badly infected and the majority of all their inmates developed the disease, while other tents wholly escaped. Blankets and tentage became soiled with typhoid discharges and in this way the disease was propagated and carried by the company wherever it went. We believe, therefore, that personal contact was a very important factor in the spread of the disease."

In investigating an epidemic of typhoid fever at Fort Dade, Florida, towards the end of the year 1904, the writer found that no case had occurred outside of a certain barrack though there

were an equal number of persons living outside the barrack and all had a common water supply; also that boiling the water had no effect on the prevalence of the disease while thorough disinfection put an end to it (See report of the Surgeon General of the Army, 1905).

Investigation of another epidemic which occurred at Fort Niagara, New York, in the same year showed that of eleven cases nine were occupants of the same barrack, and one more spent most of his time there; there were three other barracks each occupied by a company of infantry at the same post.

That the Germans thoroughly believe in the direct transmission of typhoid fever is shown in the methods pursued by Koch in stamping out the disease in several outbreaks that occurred in Westphalia and on the Franco-German frontier during the years 1898-1902.

In view of these instances and many others that could be cited the statement of Dr. Leigh Canney that "if the water and liquid avenues to a camp or community are protected, epidemics will never occur" is certainly misleading and in practice might produce disastrous results.—CHARLES F. MASON.

NORWEGIAN FIELD COOKERY.

ALL non-commissioned-officers in the Norwegian army who have to do with cooking for the soldiers are instructed in field cookery, says Captain Reichborn Kjennerud (*Militarlaegen*). A few must cook for many soldiers. As soon as the bivouac service begins two men are ordered to dig the cooking ditches. The ditch, which is 75 cm. long by 40 broad and 25 deep, lies in the direction of the wind. A draught-pipe, made of turf, empty boxes, etc., is fixed at one end of the ditch. Fifteen cooking kettles, the allowance of a company of thirty men, are hung in the ditch. Such a cooking ditch can be dug even by an inexperienced man in four or five minutes, and the water in a half filled kettle will boil in about fifteen minutes. While the two men dig the ditch, water and fire are brought by four other men.—HANS DAAE.

News of the Services.

THE following officers have been elected to membership in the Association of Military Surgeons of the United States, to date from January 1, 1906.

THE UNITED STATES ARMY

Dr. Hermon Erwin Hasseltine, U.S.Army.

THE UNITED STATES NAVY.

Assistant Surgeon William Arnold Angwin, U.S.N.

Surgeon William Hemphill Bell, U.S.N.

*Assistant Surgeon Bruce Elmore, U.S.N.

Assistant Surgeon Robert G. Heiner, U.S.N.

Assistant Surgeon Theodore Normand Pease, U.S.N.

Assistant Surgeon Edward U. Reed, U.S.N.

Acting Assistant Surgeon Francis A. Richardson, U.S.N.

Assistant Surgeon Edward C. White, U.S.N.

THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE.

Assistant Surgeon Marshall C. Guthrie, P.H.&M.H.S.

Acting Assistant Surgeon Montafix W. Houghton, P.H.&M.H.S.

THE NATIONAL GUARD.

Major Eugene H. Abington, Ark. N.G.

Major Edmund W. Bayley, Minn. N.G.

Major William C. Bissell. N.G. N. Y.

Lieutenant Robert Collyer Bourland, Ill. N.G.

Colonel George Brown, N.G. Ga.

Captain Lucius E. Burch, Tenn. N.G.

Major William A. Burgess, N.G. Wyo.

Captain John Caldwell Calhoun, N.G. La.

Captain Waldo Lee Cheshire, Oreg. N.G.

Captain Marshall Clinton, N.G. N.Y.

Lieutenant George S. Crampton, N.G. Pa.

Captain Charles Garrard Daugherty, Ky. S.G.

Major John Williams Duke, Okla. N.G.

General John M. T. Finney, Md. N.G.

Captain Frank Charles Floeckinger, Tex. N.G.

Captain C. L. Gritman, N.G. Idaho.

Captain Joseph Arda Hall, Ohio N.G.

Major William James Hanna, N.G. Cal.

Major Daniel William Iford, Ohio N.G.

Major D. Arthur Jay, Ia. N.G.

Captain Charles H. Keene, Mass. V.M.

Lieutenant A. H. Lindorme, N.G. Ga.

Colonel Charles MacLachlan, N.G. N. Dak.

*Not now in active service.

Lieutenant Oliver Paul Mercer, Ind. N.G.
Major Harvey Gilmer Mudd, N.G. Mo.
Captain William Nelson Offutt, Ky. S.G.
Lieutenant George Osgood, Mass. V.M.
Major Francis L. Oswald, N. G. N. Y.
Captain James N. Pocock, Wash. N.G.
Captain Nelson G. Russell, N.G. N. Y.
Major Edward Sanborn Smith, N.G.Mo.
Major Fred S. Songer, Ill.N.G.
Colonel William R. Tipton, N.G. N. Mex.
Major John William Voss, Mass. V.M.
Lieutenant William Clark Wood, N.G. N. Y.
Surgeon Julius Frederick Zenneck, N.G. N. J.

ASSOCIATE MEMBERS.

*Captain John Duston Howe, U.S.V.
Captain Edward D. Middleton, N.G. Iowa.
*Acting Assistant Surgeon Ernest L. Shurly, U.S.A.

Assistant Surgeon F. G. Abeken, U.S.N., ordered from Tutuila Naval Station home to await orders.

Dr. George F. Adair, U.S.A., ordered from Fort Terry to Madison Barracks for temporary duty.

Lieutenant John H. Allen, U.S.A., ordered for examination for promotion.

Assistant Surgeon M. H. Ames, U.S.N., appointed Assistant Surgeon with the rank of Lieutenant (j. g.), and ordered to the Norfolk Naval Hospital.

P. A. Surgeon J. W. Ames, P.H.&M.H.S., ordered from Ellis Island to New Orleans for special temporary duty in the state of Louisiana.

P. A. Surgeon J. F. Anderson, P.H.&M.H.S., ordered to Reedy Island Quarantine Station and return.

Lieutenant Colonel Daniel M. Appel, U.S.A., ordered to command the San Francisco Medical Supply Depot.

Captain Bailey K. Ashford, U.S.A., relieved from duty in Porto Rico and ordered to Washington Barracks.

P. A. Surgeon F. A. Asserson, U.S.N., ordered from the New York Navy Yard to the Naval Medical School.

Surgeon H. W. Austin, P.H.&M.H.S., appointed delegate to the XV International Medical Congress, and granted four months leave.

Assistant Surgeon J. W. Backus, U.S.N., ordered from the *Hancock* to the Naval Medical School.

Dr. Charles L. Baker, U.S.A., granted three months leave.

Lieutenant Colonel John M. Banister, U.S.A., promoted from Major March 29, 1906.

Captain Charles Norton Barney, U.S.A., promoted from First Lieutenant, January 12, 1906.

*Not now in active service.

Lieutenant James L. Bevans, U.S.A., ordered for examination for promotion.

Lieutenant R. M. Blanchard, U.S.A., ordered from the Philippines to Camp McKinley, Honolulu.

Lieutenant Horace D. Bloombergh, U.S.A., ordered for examination for promotion.

P. A. Surgeon Rupert Blue, P.H.&M.H.S., ordered to the Hygienic Laboratory in Washington for temporary duty, and to proceed to Reedy Island Quarantine Station and return.

Assistant Surgeon J. F. Boggess, P.H.M.H.S., ordered from Cape Charles Quarantine Station to Stapleton, N. Y.

Lieutenant Colonel Louis Brechemin, U.S.A., ordered from the San Francisco Medical Supply Depot to the New York Medical Supply Depot.

Lieutenant Louis Brechemin, Jr., U.S.A., ordered for examination for promotion.

Lieutenant Roger Brooke, Jr., U.S.A., ordered for examination for promotion.

Assistant Surgeon F. H. Brooks, U.S.N., ordered from the Naval Medical School to await orders.

P. A. Surgeon E. M. Brown, U.S.N., ordered from the Naval Medical School home to await orders.

Dr. Ira C. Brown, U.S.A., ordered to accompany troops from Fort Niobrara to Fort Washakie.

Lieutenant Charles Y. Brownlee, U.S.A., ordered for examination for promotion.

Surgeon W. H. Bucher, U.S.N., ordered to the Naval Medical School.

Lieutenant Carroll D. Buck, U.S.A., ordered for examination for promotion.

Assistant Surgeon F. E. Campbell, U.S.N., ordered from the *Newport* home to await orders.

Lieutenant James Carroll, U.S.A., appointed delegate to the annual meeting of the Louisiana State Medical Society.

Lieutenant R. L. Carswell, U.S.A., ordered to the depot of Recruits and Casuals, Fort McDowell, Angel Island, and granted two month's leave.

Lieutenant W. P. Chamberlain, U.S.A., ordered to Jackson Barracks, La.

Dr. Alpha M. Chase, U.S.A., ordered from Fort Reno to Fort Clark for temporary duty.

Captain W. C. Chidester, U.S.A., promoted from First Lieutenant, March 24, 1906. and granted one month's leave from the Philippines.

Assistant Surgeon I. F. Cohn, U.S.N., ordered to the Norfolk Naval Hospital.

Assistant Surgeon George L. Collins, P.H.&M.H.S., ordered from Reedy Island Quarantine Station to Cape Charles Quarantine Station.

Dr. Harold D. Corbusier, late Contract Surgeon U.S.A., has withdrawn

from the Army Medical Service and entered upon private practice at 921 Watchung Avenue., Plainfield, N. J.

Lieutenant Harold W. Cowper, U.S.A., ordered from Washington Barracks, to Plattsburgh Barracks.

Major William D. Crosby, U.S.A., ordered to Vancouver Barracks.

Lieutenant Colonel W. B. Davis, U.S.A., ordered from the New York Medical Supply Depot to the Headquarters Department of the Lakes as Chief Surgeon.

Assistant Surgeon F. W. S. Dean, U.S.N., ordered from the *Oregon* to Washington for special duty, and thence home to await orders.

Assistant Surgeon J. P. DeBruler, U.S.N., ordered from the *Oregon* home to await orders.

Lieutenant M. A. DeLaney, U.S.A., ordered for examination for promotion.

Assistant Surgeon Hugh de Valin, P.H.&M.H.S., ordered from Baltimore to Reedy Island Quarantine Station.

Lieutenant John R. Devereux, U.S.A., ordered for examination for promotion.

Captain J. Carlisle DeVries, the official reporter of the Association of Military Surgeons, who was recently an Acting Assistant Surgeon in the Navy, has been commissioned Assistant Surgeon in the New York National Guard, from February 16, 1906, and assigned to the 14th Infantry Regiment.

Assistant Surgeon B. H. Dorsey, U.S.N., ordered from Naval Recruiting Service to await orders.

Lieutenant Louis C. Duncan, U.S.A., ordered to Fort Missoula.

Assistant Surgeon J. R. Dykes, U.S.N., ordered from the *Oregon* to Washington for special duty, and thence home to await orders.

Assistant Surgeon R. E. Ebersole, P.H.&M.H.S., ordered from San Francisco to Manila.

Major Peter R. Egan, U.S.A., retired from active service on account of disability, April 2, 1906.

Lieutenant George M. Ekwurzel, U.S.A., ordered for examination for promotion.

Assistant Surgeon E. O. J. Eytinge, U.S.N., ordered from the Naval Medical School to the Asiatic Station.

Surgeon Ammen Farenholt, U.S.N., ordered from the *Oregon* home to await orders.

Assistant Surgeon J. Flint, U.S.N., ordered to the *Franklin*.

Assistant Surgeon T. G. Foster, U.S.N., ordered from the Naval Medical School to the *Chicago*.

P. A. Surgeon Edward Francis, P.H.&M.H.S., ordered to New Orleans for temporary duty, and thence to rejoin station.

A. A. Surgeon John Frick, P.H.&M.H.S., ordered from Tampico to Vera Cruz, Mexico.

A. A. Surgeon L. D. Fricks, P.H.&M.H.S., ordered from Ellis Island, N. Y., to Fort Stanton, N. M.

Assistant Surgeon W. H. Frost, P.H.&M.H.S., ordered from Baltimore, Md., to temporary duty at Ellis Island.

Major Charles M. Gandy, U.S.A., ordered from Fort Wayne to the United States Military Academy at West Point, and to the Surgeon General's Office for temporary duty pending his report at the Military Academy.

Lieutenant Nelson Gapen, U.S.A., ordered from Angel Island to Columbus Barracks.

Dr. Fletcher Gardner, U.S.A., ordered from Fort Crook to Fort Michie.

Lieutenant W. A. Gordon, Jr., Oshkosh, Wis., appointed Assistant Surgeon W.N.G.

Assistant Surgeon C. C. Grieve, U.S.N., ordered from the *Frolic* home to await orders.

A. A. Surgeon T. H. D. Griffiths, P.H.&M.H.S., granted one month's leave.

Lieutenant Samuel C. Gurney, Assistant Surgeon Mich. N.G., has gone to the Philippines under appointment as Medical Inspector of the Philippine constabulary, an office under the direction of the Philippine Civil Service.

Surgeon J. A. Guthrie, U.S.N., retired from active service, March 28, 1906.

Dr. Henry M. Hall, U.S.A., granted one month's extension of leave.

Colonel John D. Hall, U.S.A., retired from active service March 17, 1906.

Major H. M. Hallock, U.S.A., granted one month's extension of leave.

Lieutenant Paul S. Halloran, U.S.A., ordered for examination for promotion.

Lieutenant John W. Hanner, U.S.A., ordered to West Point.

Colonel Philip F. Harvey, U.S.A., ordered from the Headquarters Department of the Lakes at Chicago to the Headquarters Department of the East at Governor's Island.

Assistant Surgeon G. S. Hathaway, U.S.N., ordered from the Naval Medical School to the *Constellation*.

Colonel Valery Havard, U.S.A., ordered from the Headquarters Department of the East at Governor's Island to Washington as President of the Army Medical School and of the Army Medical Board, etc.

Lieutenant George P. Heard, U.S.A., ordered for examination for promotion.

Colonel Charles L. Heizmann, U.S.A., relieved from duty in Washington as President of the Army Medical School and Chief of the Library and Museum Division to San Francisco as Chief Surgeon of the Department of California and Superintendent of the Army Transport Service.

Assistant Surgeon W. S. Hoen, U.S.N., ordered from the *Chicago* home to await orders.

Lieutenant John B. Huggins, U.S.A., ordered from transport duty to proceed to Manila.

Surgeon E. O. Huntington, U.S.N., discharged from treatment at the New York Naval Hospital and ordered to the New York Naval Recruiting Rendezvous.

Assistant Surgeon B. F. Jenness, U.S.N., ordered from the New York Naval Hospital to the Naval Medical School.

Assistant Surgeon J. B. Kaufman, U.S.N., appointed Assistant Surgeon with the rank of Lieutenant (j. g.), and ordered to the Norfolk Naval Hospital.

Surgeon D. B. Kerr, U.S.N., ordered to the Naval Medical School.

Major Theron W. Kilmer, has been promoted Surgeon of the 22nd Regiment, Engineers, N.G.N.Y.

Major William L. Kneedler, U.S.A., reported for treatment at the Presidio General Hospital.

Lieutenant Conrad E. Koerper, U.S.A., ordered for examination for promotion.

Dr. Fred T. Koyle, U.S.A., ordered from Fort Bliss to Fort McDowell.

Lieutenant Lloyd Le R. Krebs, U.S.A., ordered for examination for promotion.

Assistant Surgeon W. S. Kuder, U.S.N., appointed Assistant Surgeon with the rank of Lieutenant (j. g.), and ordered to the Boston Naval Hospital.

Lieutenant Colonel Louis A. La Garde, U.S.A., promoted from Major, March 17, 1906.

Lieutenant Samuel E. Lambert, U.S.A., ordered to Fort Wright.

Assistant Surgeon M. E. Lando, U.S.N., ordered from the Naval Medical School to the Tutuila Naval Station.

Surgeon C. H. Lavinder, P.H.&M.H.S., ordered from Stapleton, N. Y., to temporary duty at Detroit, Mich.

Captain William F. Lewis, U.S.A., in temporary charge of the Chief Surgeon's Office, Department of the Lakes.

Lieutenant William L. Little, U.S.A., ordered from Jackson Barracks to Fort Sam Houston.

Dr. Stephen M. Long, U.S.A., order for Philippine service revoked and granted three months leave.

A. A. Surgeon J. W. Lucky, P.H.&M.H.S., granted one month's leave.

Major Charles Lynch, U.S.A., promoted from Captain, April 2, 1906.

Major Charles Lynch, U.S.A., late Army medical representative with the Japanese forces, has been tendered the decoration of the fourth class of the Imperial Order of the Sacred Treasure by the Mikado, and the State Department has requested the permission of Congress for its acceptance.

Dr. Francis M. McCallum, U.S.A., is the subject of a bill introduced in the Senate by Mr. Warner providing for his appointment as a Captain and Assistant Surgeon on the retired list: also granted one month's extension of leave.

P. A. Surgeon T. B. McClintic, P.H.&M.H.S., ordered from the Hygienic Laboratory, Washington, to the San Francisco Quarantine Station.

Assistant Surgeon G. H. McConnon, U.S.N., ordered from the Naval Medical School to the *Constellation*.

P. A. Surgeon D. W. McCoy, P.H.&M.H.S., granted one month's leave.

A. A. Surgeon W. R. McKinley, P.H.&M.H.S., granted one month's leave.

Dr. Clemens W. McMillan, U.S.A., ordered from Fort Trumbull to Fort Terry for temporary duty, and thence to Fort Crook, Neb.

Captain Charles E. Marrow, U.S.A., ordered from Fort Sheridan to Fort Monroe.

Assistant Surgeon E. R. Marshall, U.S.N., ordered from the Naval Medical School to the Guantanamo Naval Station.

Surgeon E. H. Marsteller, U.S.N., ordered to the St. Louis Naval Recruiting Station.

Assistant Surgeon G. M. Mayers, U.S.N., ordered from the *Constellation* to the Naval Medical School.

Assistant Surgeon J. B. Mears, U.S.N., ordered from the Naval Medical School to await orders.

Assistant Surgeon R. H. Michels, U.S.N., ordered from the St. Louis Naval Recruiting Station to the Naval Medical School.

P. A. Surgeon J. M. Moore, U.S.N., ordered from the New York Naval Recruiting Station to the Naval Medical School.

Lieutenant Charles F. Morse, U.S.A., ordered to Fort Howard.

Colonel Edward B. Moseley, U.S.A., promoted from Lieutenant Colonel March 17, 1906.

Assistant Surgeon C. B. Munger, U.S.N., ordered from the Naval Medical School to the San Francisco Naval Training Station

Assistant Surgeon F. M. Munson, U.S.N., ordered from the *Lancaster* to the Naval Medical School.

Lieutenant John A. Murtagh, U.S.A., ordered for examination for promotion.

Assistant Surgeon H. T. Nelson, Jr., U.S.N., ordered from the Naval Medical School to the Naval Academy.

Lieutenant Kent Nelson, U.S.A., ordered for examination for promotion.

Dr. Ralph W. Newton, U.S.A., ordered to temporary duty in the Department of California.

Lieutenant Robert E. Noble, U.S.A., ordered for examination for promotion.

Lieutenant R. P. O'Connor, U.S.A., ordered for examination for promotion.

Assistant Surgeon E. T. Olson, P.H.&M.H.S., ordered from New York to Chicago.

Assistant Surgeon G. M. Olsen, U.S.N., ordered from the Naval Medical School to the Asiatic Station.

Dr. G. Dillon Parker, U.S.A., ordered from the Hot Springs Army and Navy General Hospital to Fort Bliss, Tex.

Lieutenant Robert U. Patterson, U.S.A., ordered for examination for promotion.

Lieutenant Colonel Henry O. Perley, U.S.A., ordered from the United States Military Academy to the Philippines.

Lieutenant Paul Monroe Pilcher, N.G.N.Y., recently assisted his father. Prof. Lewis Stephen Pilcher, formerly Passed Assistant Surgeon U.S.N., at Bellevue Hospital, New York, in a successful operation for appendicitis upon the person of his brother, Dr. James T. Pilcher, of the Bellevue Hospital staff.

Dr. Joseph Y. Porter, formerly Assistant Surgeon in the Army, is the subject of a bill introduced by Senator Taliaferro to appoint him to the retired list of the Army with the rank of Lieutenant Colonel.

Assistant Surgeon W. S. Pugh, Jr., U.S.N., ordered from the Guantanamo Naval Station home to await orders.

Dr. Julius M. Purnell, U.S.A., ordered from Fort McDowell to the Presidio of Monterey.

Dr. James Reagles, U.S.A., ordered from Fort Keogh to Fort Snelling for temporary duty.

Assistant Surgeon E. U. Reed, U.S.N., ordered from the Naval Medical School to await orders.

Assistant Surgeon T. W. Reed, U.S.N., ordered from the Naval Medical School to the New York Navy Yard.

Lieutenant William W. Reno, U.S.A., ordered for examination for promotion.

Major Charles Richard, U.S.A., appointed Army delegate to the XV International Medical Congress.

A. A. Surgeon N. D. Richardson, P.H.&M.H.S., granted one month's leave, and died at San Francisco, April 9, 1906

Lieutenant William Roberts, U.S.A., ordered for examination for promotion.

Assistant Surgeon A. H. Robnett, U.S.N., appointed Assistant Surgeon with the rank of Lieutenant (j. g.), and ordered to the New York Naval Hospital.

P. A. Surgeon M. J. Rosenau, P.H.&M.H.S., appointed delegate to the 1906 meeting of the American Medical Association.

Assistant Surgeon P. S. Rossiter, U.S.N., ordered from Honolulu Naval Station home to await orders.

Assistant Surgeon W. C. Rucker, P.H.&M.H.S., ordered from Vineyard Haven, Mass., to New Orleans for special temporary duty in the state of Louisiana.

Assistant Surgeon W. F. Schaller, U.S.N., appointed Assistant Surgeon with the rank of Lieutenant (j. g.).

Assistant Surgeon F. E. Sellers, U.S.N., ordered from the Naval Medical School to the Asiatic Station.

Colonel Nicholas Senn, after delivering the oration on Surgery for America and reading his paper on First Aid on the Battlefield before the Military Section at the Lisbon International Medical Congress, will proceed to take the Cape to Cairo trip through Africa.

Colonel Nicholas Senn has presented to the Newberry Library the working library of Prof. Meissner on internal medicine, and a botanical library of between two and three hundred volumes consisting mainly of old and classical works on herbs.

Assistant Surgeon H. Shaw, U.S.N., ordered from the *Southery* to the Naval Medical School.

Assistant Surgeon F. M. Shook, U.S.N., ordered from the Naval Medical School to the Mare Island Naval Hospital.

Lieutenant Robert Smart, U.S.A., ordered for examination for promotion.

Lieutenant William M. Smart, U.S.A., granted two month's leave.

P. A. Surgeon C. G. Smith, U.S.N., ordered from the Mare Island Naval Hospital to the Honolulu Naval Station.

Assistant Surgeon F. C. Smith, P.H.&M.H.S., ordered from Detroit to New Orleans for special temporary duty in the state of Louisiana.

Dr. Henry H. Smith, late Acting Assistant Surgeon U.S. Army, is the subject of a bill, recently introduced in Congress, to make him a Captain upon the retired list.

Assistant Surgeon P. R. Stalnaker, U.S.N., ordered from the Naval Medical School to await orders.

Major Alexander N. Stark, U.S.A., promoted from Captain, March 29, 1906.

General Alexander J. Stone, Minn. N.G., St. Paul, Minn., is actively interested in an excursion of physicians and their families to China and Japan, the party to leave St. Paul about July 21, and return about October 9, the cost of the entire trip, hotel expenses and all, to be \$700.00. Those of our readers who would like to take the trip should correspond with General Stone.

Major Paul F. Straub, U.S.A., promoted from Captain, March 17, 1906.
Dr. Frank Suggs, U.S.A., granted two months leave.

Lieutenant Verge E. Sweazey, U.S.A., ordered for examination for promotion.

Assistant Surgeon J. L. Taylor, U.S.N., ordered from the Naval Medical School to the *Yankee*.

Captain A. E. Truby, U.S.A., granted one month's leave.

Captain Willard F. Truby, U.S.A., granted one month's leave.

P. A. Surgeon J. P. Traynor, U.S.N., ordered from the Boston Naval Hospital to the *Southery*, with additional duty at the Portsmouth Navy Yard.

Brigadier General Henry S. Turrill, U.S.A., promoted from Colonel, March 28, 1906, and retired from active service.

Captain Francis M. C. Usher, U.S.A., granted three month's leave.

Dr. Freeman V. Walker, late Captain and Assistant Surgeon U.S.A., is the subject of a bill favorably reported by the House Military Committee, authorizing a review of the findings of the retiring board, by which he was wholly retired, and permitting of his appointment upon the retired list in case of a favorable report.

Captain James P. Warbasse, N.G.N.Y., has been elected Editor of the *New York State Journal of Medicine*, the organ of the recently consolidated New York State Medical Society, and has brought out, as his first issue, a superb centennial number. Captain Warbasse has been for many years an accomplished member of the editorial staff of the *Annals of Surgery*, and brings to his new duties, not only much experience, but a high grade of personal predilection for editorial work.

Assistant Surgeon R. A. Warner, U.S.N., ordered from the Naval Medical School to await orders, and thence to take station at the Naval Academy.

P. A. Surgeon U. R. Webb, U.S.N., ordered from the Naval Academy to the Naval Medical School.

Surgeon C. P. Wertenbaker, P.H.&M.H.S., ordered from St. John to Quebec, Canada, with the Commissioner of Immigration.

Lieutenant Clement C. Whitcomb, U.S.A., ordered for examination for promotion.

Assistant Surgeon E. C. White, U.S.N., ordered from the Naval Medical School to await orders.

Lieutenant E. R. Whitmore, U.S.A., ordered to Fort Warren, Mass., and for examination for promotion.

Dr. Walter Whitney, U.S.A., ordered from Fort Crook to Fort Terry.

Assistant Surgeon C. K. Winn, U.S.N., appointed Assistant Surgeon with the rank of Lieutenant (j. g.), and ordered to duty with Naval Recruiting Party at Des Moines, Ia

Lieutenant Compton Wilson, U.S.A., ordered from Fort Howard to Fort Sheridan.

Lieutenant William P. Woodall, U.S.A., ordered for examination for promotion.

Assistant Surgeon E. L. Woods, U.S.N., ordered from the Naval Medical School to await orders.

P. A. Surgeon G. B. Young, P.H.&M.H.S., ordered for examination for promotion.

Assistant Surgeon W. J. Zalesky, U.S.N., ordered from the *Yankee* to the *New York*.

THE PHILIPPINE ISLANDS MEDICAL ASSOCIATION. The program of the third annual meeting, held in the Library of the Bureau of Science in Manila, on the 28th of February and the 1st, 2nd, and 3rd of March, shows a high degree of scientific progress and includes many papers of the highest scientific value.

THE ARMY MEDICAL BILL IN THE SENATE. The Senate took up the Army Medical Bill on Thursday, March 29th, and continued the irrelevant discussion with regard to the retired list. Mr. Hale persisted in his unreasonable attitude based upon the fact that the small increase of the Medical Department might cause an increase in the number of officers who might possibly be retired. He also glorified the position of the Contract Surgeon notwithstanding the fact that no Contract Surgeon approves of the position. The bill was well supported by Senator Warren, the chairman of the committee, and by Senator Lodge, and upon coming to a vote passed by forty-two to five, the nays being Senators Carmack, Hale, Kean, Spooner and Teller.

THE ARMY MEDICAL BILL IN THE HOUSE. The House Committee has reported the Senate Bill on Army Medical Reorganization with amendments providing for the reduction of the Colonels to fourteen instead of sixteen, Lieutenant Colonels to twenty instead of twenty-four, Majors to one hundred instead of one hundred and ten; doing away with the provision for examination of Lieutenant Colonels for promotion and providing that an officer of the Medical Reserve Corps, who shall refuse to take up active duty, shall forfeit his commission.

THE FINGER PRINT AND PHOTOGRAPHIC SYSTEM. The board of officers consisting of Major Walter D. McCaw, Surgeon U.S.A., and Major Eugene F. Ladd, Military Secretary, appointed for the purpose of revising the identification system of the Army, has recommended the finger print and photographic system for the military service, and it has been adopted, to go into effect upon September 1, 1906, or as soon thereafter as practicable. An identification record will consist of finger prints and a brief personal description, together with front and profile photographs of each recruit.

MASSACHUSETTS VOLUNTEER MILITIA. A general order announces a lecture to the medical and other officers of the Massachusetts Volunteer Militia by Colonel Valery Havard, U.S.A., upon "Military Hygiene and Modern Warfare."

A lecture upon "Hygiene and Camp Sanitation" is ordered to be given to each command by its medical officer.

Further paragraphs of the order prescribe definitely the organization and duties of the Hospital Corps in the encampments of 1906, and authorize a personnel of non-commissioned officers and privates of ninety-four men, in addition to the ambulance company which is to perform its field duty as an undivided command.

THE NAVAL MEDICAL SCHOOL COMMENCEMENT. The graduation exercises of the Naval Medical School were held recently in the school building, and a class consisting of the following members was graduated: Edward H. H. Olds of Virginia, Milton E. Lando of California, Francis M. Shook of Minnesota, George M. Olsen of Minnesota, Judson L. Taylor of Texas, Fletcher H. Brooks of North Carolina, Ernest O. J. Eytinge of New York, Thomas G. Foster of Alabama, George S. Hathaway of Massachusetts, Edward R. Marshall of Tennessee, George H. McConnon of Pennsylvania, John B. Mears of Virginia, Curtis M. Munger of Iowa, Hugh T. Nelson, Jr., of Virginia, Edward U. Reed of Pennsylvania, Thurlow W. Reed of New York, Frank E. Sellers of Virginia, Paul R. Stalnaker of Texas, Richard A. Warner of the District of Columbia, Edward C. White of New Jersey, and Edgar L. Woods of Virginia. Secretary Bonaparte conferred the diplomas, and Surgeon General John M. T. Finney of Baltimore, and the President, Medical Director John C. Wise, made addresses.

MILITARY AND NAVAL MEDICINE AT THE XV INTERNATIONAL MEDICAL CONGRESS. The section upon military medicine at the Lisbon International Medical Congress will be presided over by Sr. Carlos Moniz Tavares and will consider official reports upon: (1) organization of the service of the front; (2) military surgery at the first aid station; (3) the military education of the medical officer; (4) a portable ration for field use. From the Association of Military Surgeons of the United States, Colonel Imbriaco will contribute to the first, Colonel Senn to the second, and Major Seaman to the fourth. The following subjects are also recommended for reports: (a) a medico-surgical arsenal for sanitary formations at the front; (b) purification of water in the field; (c) sterilization of surgical material in sanitary formations; (d) emergency hospital on the battlefield; (e) the sanitation of the battlefield; (f) radiography and bacteriology in the field. The following papers are announced: (1) An Armoured Motor Ambulance as a First Aid Dressing Station on the Battlefield, by Dr. Samuel Osborn; (2) Secondary Disinfection of Infected Gunshot Wounds, by Colonel Nicholas Senn; (3) Der Nervenkreislauf, by Dr. Cornelius; (4) Tableau optométrique, by Dr. Mario Moutinho; (5) Die Verpflegung grosser Heere im Kriege auf Grund der Erfahrungen des russisch-japanischen Feldzuges, by Dr. Stobaeus.

The section on Colonial and Naval medicine will be under the presidency of Sr. Ramada Curto, and will receive official reports upon: (1) yellow fever; (2) human trypanosomiasis; (3) mental diseases in tropical countries; (4) naval hospitals and their functions in time of war; (5) tuberculosis in the naval service; (6) the value of anthropometrical indications in estimating the physical aptitude of the naval recruit; (7) prophylaxis of malaria and yellow fever aboard ship or about naval stations. The following papers are also announced: (a) The Question of Ready-Made Dressings for War and Especially for Naval Service, by Dr. Prosper Barthelemy; (b) the Status of the Hospital Ship in War, by Medical Director John C. Wise; (c) Naval Sanitary Service for Italian Emigrants by Dr. Felice Santini.

Current Literature.

FOWLER'S SURGERY.*

THE long anticipated treatise on surgery by the late General George Ryerson Fowler appears as a fitting climax to the career of its distinguished author. Too much cannot be said in praise of this monumental work. The vast experience, ripe judgment, and fertility of expression, for which its author has so long been distinguished, are apparent in the highest degree in his work. The first volume discusses general surgery, giving prominence to inflammation, acute wound diseases, chronic surgical infections and tumors; considers laboratory aids, surgical technique, operations on individual structures and presents an interesting section upon gunshot wounds, illustrated by photographs of Japanese subjects taken during the late Russo-Japanese War. A portion of regional surgery is taken up also in this volume, the section including the surgery of the head, neck and thorax. It is hardly practicable in a brief notice such as we are of necessity limited to, to take up all of the admirable points of treatment brought out by the author in this volume, but it may be added that they are in every respect of the best character and of the latest variety. From an artistic and typographical standpoint the work is in a class by itself, the illustrations being new and of the most accurate description, as well as of the highest artistic quality.

***A Treatise on Surgery.** In two Volumes. By GEORGE RYERSON FOWLER, M.D., late Chief Surgeon of the National Guard of New York, sometime Major and Chief Surgeon of United States Volunteers. Examiner in Surgery of the University of the State of New York, etc. Vol. I. Imp. 8vo; pp. 722, with 398 illustrations. Philadelphia and London, W. B. Saunders Co., 1906.

AN ENCYCLOPÆDIC TREATISE ON ORTHOPÆDIC SURGERY.*

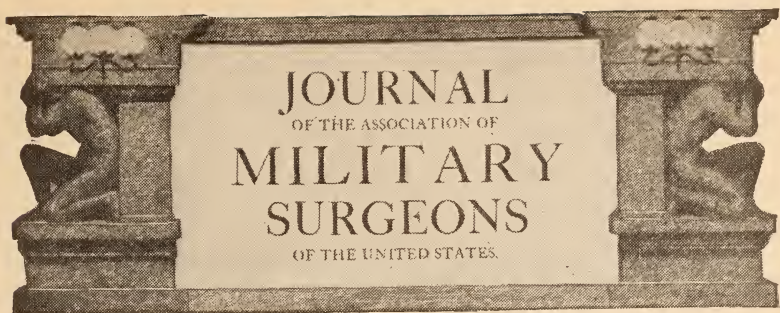
EVEN in this day of monumental works, the manual and atlas of orthopedic surgery of Prof. James K. Young is a notable incident in medical publishing. Dr. Young's many years experience qualifies him to speak with authority upon his subject, and the book shows an eminently successful effort to cover the ground. The text is not only accurate, but also clear and adapted for the use of the general practitioner, as well as to the special surgeon. The author's views are modern, although conservative, and the methods of treatment recommended are practical, while the pathology is correct and well stated. As a specimen of book making, the work belongs to the highest class and is of the most sumptuous type. Its typography is clear and elegant, its binding is handsome and attractive, and it lies readily open upon the desk. Its illustrations are particularly noteworthy because of their originality and the beauty of their execution, the whole combining to form a climax in orthopedic literature.

WOODHULL'S PERSONAL HYGIENE.†

FOR some years past, and since his retirement from active military service, General Woodhull has been serving as lecturer on hygiene at Princeton and now presents to the public this volume upon personal hygiene, which contains the substance of his instructions. The book is accurate and expressive, as would be expected from so well known a writer, as its author, and is to be commended as the best work upon the subject for the use of the college man. Points brought out, which are usually disregarded in books of this character, are the development of the body and physical culture exercises, catching cold, swimming and bathing, etc. The work is adapted to a wide audience, in addition to the undergraduate classes for whom it is designed.

**A Manual and Atlas of Orthopedic Surgery. Including the history, etiology, pathology, diagnosis, prognosis, prophylaxis, and treatment of deformities.* By JAMES K. YOUNG, M.D. 4to; pp. 942, with 720 illustrations. Philadelphia, P. Blakiston's Son & Co., 1905.

†*Personal Hygiene.* Designed for undergraduates. By ALFRED A. WOODHULL, M.D., Brigadier General U.S.A., retired. 12mo; pp. 221. New York, John Wiley & Sons, 1906.



Original Memoirs.

FIRST AID ON THE BATTLEFIELD.*

By COLONEL NICHOLAS SENN,

^{*}SURGEON GENERAL OF ILLINOIS; LIEUTENANT COLONEL AND CHIEF OF THE OPERATING STAFF DURING THE SPANISH-AMERICAN WAR.



THE responsibilities of the military surgeons grow with the advance of civilization. The millennium of peace is as yet not in sight. The surface of the earth will have to undergo many changes in establishing permanent boundary lines between the different countries according to race, religious convictions, language, customs, etc., before the children of the

school rooms will be supplied with a geography destined to remain as a permanent record of the final division of the inhabitable parts of the globe in accordance with the best interests of the people inhabiting them regardless of the personal interests of the favored few in power by inheritance or selection. Arbitration in the near future will contribute much in bringing about an equitable redistricting of arable and mineral-yielding lands and sea rights with

*Delivered before the Military Section of the Lisbon International Medical Congress, April, 1906.

a view of the greatest benefit to the masses, but before this is accomplished the world will witness many bitter and bloody conflicts. The time has fortunately gone by and never will return again when a single person in power can provoke a war. An honorable cause of war means more now than in the past. The one who conducts the affairs of a nation consults his advisers and feels the pulse of the press and listens to the voice of his people before he decides to assume the grave responsibilities of a war. While great wars will be of rare occurrence in the future, the interest in perfecting military surgery should rather grow than diminish so as to render warfare when it becomes inevitable more and more humane. Civilization begets a spirit of humanity and humanity in peace and war as an individual and national virtue is being appreciated and encouraged more keenly and earnestly than ever before by all enlightened nations. We as military surgeons form the most important element of the non-combatant integral part of every army, and as such upon us rests largely the comfort, health and welfare of the soldier. The medical profession as a whole most unselfishly is laboring now more earnestly and persistently than ever before in the noble work of preventing disease and in minimizing the dangers of accidents and operative procedures by improved hygienic measures and sanitary precautions and by rendering the wounded prompt, rational first aid, and by performing all operations under strictest antiseptic and aseptic precautions. The military surgeon must imitate the example of his colleagues in civil life. This most important function consists in making ample preparations for war in time of peace. It was the preparedness of the Medical Departments of the Japanese Army and Navy which accounted for the excellent health of the fighting men on land and sea, and the unprecedented success in the treatment of the wounded. No other country had improved the time of peace to make such adequate preparations for war with a view of preventing disease and care of wounded like Japan. The military and naval surgeons of Japan have won a victory over preventable diseases and wound infection well calculated to stimulate other nations to follow their example. Conservatism will characterize the military surgery of the future.

The two great sources of danger that face the wounded upon the battlefield—hemorrhage and infection—will be minimized by additional and improved hemostatic measures, and the more general and effective applications of the principles of aseptic and antiseptic precautions. Amputations will be limited to injuries with extensive destruction of the soft parts and complications involving large vessels and nerves which in themselves are sufficient to arrest the nutrition of the limb. Gunshot injuries of bones and joints will no longer determine the propriety of primary resection and amputation, and the danger of penetrating wounds of any of the large cavities of the body will be greatly diminished by the prompt employment of measures calculated to guard against septic infection, and other immediate and remote complications. I take it for granted, that I am expected on this occasion to discuss briefly the most salient topics which will engage the attention of the military surgeons of future wars, and which will enable them to reduce the death rate, diminish suffering, save limbs, and prevent painful remote complications in cases of bullet and other wounds inflicted on the battlefield. The success of military surgery depends largely on the care with which preparations for war are made, the degree of general intelligence of the soldier, and on the amount of knowledge pertaining to first aid inculcated in the minds of officers and men, and more especially on the degree of efficiency of the Sanitary Corps.

1. *As the fate of the wounded depends so much on the time and thoroughness with which first aid is rendered, the military surgeons must make ample provisions in time of peace to secure effectiveness of this service in war.*

Since the knowledge of asepsis in the practice of surgery has become common property, many military surgeons have contended that the first aid dressing, in order to be effective, must be applied only by professional men, claiming if it is done by laymen that it will be productive of more harm than good. This position is untenable both in theory and practice. It is now generally conceded, as the result of ample clinical experience in the field that gunshot wounds inflicted by small arms are practically aseptic, and that the best results are obtained by making no at-

tempt at disinfection, but guarding simply against post-injury infection by the prompt application of an efficient first aid dressing. The men who argue in favor of limiting the first aid work to skilled hands advocate the speedy transportation of the wounded to the first dressing station. If this were done, in spite of the additional risks incurred in crossing the field beyond the range of bullets, this course would still remain impracticable during any great battle when the number of wounded exceed by far the working capacity of the limited number of surgeons at the front, to say nothing of the increased risks of infection and unnecessary suffering inflicted on the uncared-for wounded. Under the fire of a French Brigade at St. Privat 6,000 officers and men of the Prussian guard, or a third of their total number, were killed and wounded in ten minutes at a distance of 1,500 yards, during the Franco-Prussian war. During the Russo-Turkish war the Russians in many instances suffered losses from aimless fire at 3,000 yards, while instances occurred not infrequently of divisions of 10,000 men losing half their number at one mile from the enemy. We had a similar experience on a small scale during the battle at San Juan Hill, and during a few of the great battles of the Russo-Japanese war the number of wounded far exceeded the immediate working capacity of the available medical officers. These instances and other numerous experiences during great conflicts cannot fail to convince those who are placed in charge of the wounded of the utter impossibility of rendering timely aid, if this function should be limited to medical officers exclusively.

The battles of the future will be fought at greater range than in the past, and will cover a much larger territory, another important argument in favor of a larger force of non-combatants trained for the first aid work. But in engagements on a large scale, even the duplication of the number of members of the Sanitary Corps, as it exists at the present time in all countries, would not suffice in discharging the duties which the governments of the contending armies owe to the wounded. The soldier has a right to expect to receive assistance and proper care the moment he is disabled, be this in camp, on the march, or in the firing line. When a soldier is struck down by a bullet in the

discharge of his duty, he is no longer a combatant, and has a claim on humanity which no nation can ignore. The height of humanity in warfare will be reached when every soldier can carry the conviction with him to the front that the moment he is wounded, he will receive by his own efforts, or by assistance within easy reach, the essential benefits of modern surgery. This means that every officer and soldier should be familiar with the elementary principles of first aid, with the means of which he should be supplied, and with the use of which he should be conversant. The instruction of the Army as a whole in hygiene, sanitation, is a task that belongs to the medical officers. It is only by patient and persistent work in this direction that the wounded of future wars can expect to receive the timely attention and care to which they are so well entitled. From my own personal experience, I know that the soldier is anxious to learn what he should do to maintain his health, and how to act in case of an emergency. He is a willing and attentive pupil when he is given an opportunity to learn what pertains to his well being, and how to take care of himself and his comrades in case of injury. A consciousness of knowing what to do when he or one of his comrades is struck down by a bullet imparts confidence and additional courage when he takes his place in the firing line. To the average soldier the thought of sudden death is less terrible than of being wounded and left helpless on the field for hours or days without any hope of receiving the necessary care. In the tumult of battle the risk to life is soon forgotten, but when the soldier is disabled from taking further part in the fight, his thoughts naturally turn to his injury and means of obtaining immediate relief. If by previous instructions he has been made familiar with first aid work, he at least will know what to do, a matter of greatest consequence in emergency cases, and he himself or with the aid of a near-by comrade can meet intelligently the most urgent indications, and when this has been done he can place himself, or can be conveyed to a sheltered place, if such can be found near by, until the firing ceases, when he can be transported with safety to the nearest dressing station. In large battles the speedy removal of the wounded beyond the range of bullets is only feasible when

the terrain is especially adapted for such a procedure, but in the majority of major engagements lives will be saved and much suffering spared by making ample provision for first aid at or near the firing line. It would be useless and even dangerous to attempt to teach the soldier all the details described in handbooks on First Aid. All that we can ever expect from him is to master and be able to put into safe practice the essential principles which should govern his action in case of emergency. Such elementary instruction he should receive when he is taught the art of war, and should not be postponed, as has been done only too often in the past, until war clouds make their appearance. A few lessons illustrated by drawings, demonstrations, and practice on the living subject will accomplish the desired object and will be of inestimable value to the men as citizens and soldiers.

2. *The first aid dressing should combine simplicity with safety against post-injury infection.*

The first aid dressing in general use that should be on the person of every combatant must necessarily be of the simplest kind, in order to become efficient and useful in the hands of the non-professional. It must be compact and of easy application. No soldier will encumber himself for any length of time with a bulky dressing, and the simpler its make-up, the better use he will make of it when needed. At the Madrid International Medical Congress, I had the honor to present a paper* before the Military Section on "First Dressing on the Battlefield." The first aid package which I described and illustrated in that paper appeared to me to answer the essential requirements and has been favorably commented upon in different journals devoted to military surgery. Its simplicity, compactness, and ease of application by instructed laymen should speak in its favor. If, at this time, I had any criticism to offer, it would be regarding the two strips of adhesive plaster intended to hold the dressing securely in place. In the course of time adhesive plaster even of the best quality loses its adhesiveness. It has occurred to me that instead of adhesive plaster two thin capsules of glass containing collodium

*JOURNAL OF THE ASSOCIATION OF MILITARY SURGEONS, Vol. XIII, Dec. 1903, page 331.

and incorporated in the dressing in opposite margins might prove preferable. These capsules are broken under finger pressure when the dressing is to be applied, and the liberated collodium would hold the dressing securely in place. Such a substitute for adhesive plaster would maintain indefinitely the permanency of the first aid package as far as a means of fixation is concerned, and the antiseptics incorporated in the dressing, boric and salicylic acids, 4:1, are not liable to undergo detrimental chemical changes in the course of time.

The dressing consists essentially of two antiseptic pads of cotton, wrapped in gauze, and fastened together by two stitches and continuous with a gauze roller which is made use of instead of the triangular bandage for holding the dressing in place, and for immobilizing the injured part. The gauze roller should take the place of the triangular bandage in every first aid dressing as it requires much less space and is more serviceable as a means of fixation and support. The brown iodine spot in the center of the pad on the side to be brought in contact with the wound corresponds with the location of the antiseptic powder incorporated in the absorbent cotton and serves as an infallible guide in applying the pad in the right place.

3. *The first aid must have in view the treatment of shock, hemorrhage, dressing of the wound, and immobilization of the injured part.*

The treatment of shock in the field is necessarily very unsatisfactory, but fortunately the infliction of wounds by the small caliber bullet is not often productive of this symptom to any serious extent. Rest in the recumbent position, a hypodermatic injection of one-fourth of a grain of morphine with the internal use of spirits are the most available limited means, and answer the most urgent indications.

The treatment of hemorrhage at the front, more especially in the hands of unprofessional help, must be conducted with the greatest caution. I fear the employment of elastic constriction has been championed with too much enthusiasm. Death from external hemorrhage from wounds of the extremities is comparatively infrequent, as has been shown by statistics of a num-

ber of great wars during the past. It cannot be determined that the new small caliber bullet inflicts wounds in which large vessels are implicated that are more prone to give rise to dangerous hemorrhage than the old leaden missile. But even with this additional element of increase of hemorrhage, the danger to life is small as compared with the sufferings and remote risks which attend circular elastic constriction practiced by men who have no realization of the ill effects of prolonged constriction practiced under circumstances where the time-limit cannot be predicted. Elastic constriction is an exceedingly painful procedure, and cannot be continued for more than two hours without incurring the risk of gangrene and other more remote serious complications. I have no hesitation in expressing my conviction that elastic constriction, if too generally practiced, will do vastly more harm than good, and for this reason, the elastic constrictor should be excluded from the general field practice, and in the exceptional cases in which its employment becomes a necessity, it should be applied by a competent member of the Hospital Corps or a medical officer, who must make it his duty to send the case as quickly as possible to the first dressing station, where the ligature or aseptic tamponade will take the place of the elastic constrictor in the hands of the medical officers on duty. The instructed privates and the non-professionals of the Sanitary Corps can do much in arresting and diminishing primary hemorrhage by a resort to less harmful means of hemostasis. Elevation of the limb will often succeed not only in arresting profuse venous, but also free arterial, hemorrhage. Acute flexion of the joint above the wound will accomplish the same. Digital compression over the antiseptic dressing can be employed to great advantage, and should always be made use of if the hemorrhage is not controlled by the dressing. In very profuse hemorrhage digital compression should be continued until a surgeon can be summoned. In large open wounds the cavity is packed with the antiseptic compresses, and if hemorrhage threatens life, digital or manual pressure should be made over the antiseptic tampon. Vessel injuries treated by antiseptic tamponade will seldom require ligation, as the tampon, if the wound remains aseptic, is allowed to remain until the lu-

men of the vessel has become obliterated permanently by thrombosis and cicatrization.

Direct treatment of internal hemorrhage of any of the large cavities of the body is entirely out of question at or near the firing line. The cartridge belt, suspenders, or gunstrap can be used to the greatest advantage in limiting respiratory and abdominal movements, and thus secure for the vascular bleeding organs, as near as can be done by external mechanical means, a condition of rest conducive to effect spontaneous arrest of hemorrhage.

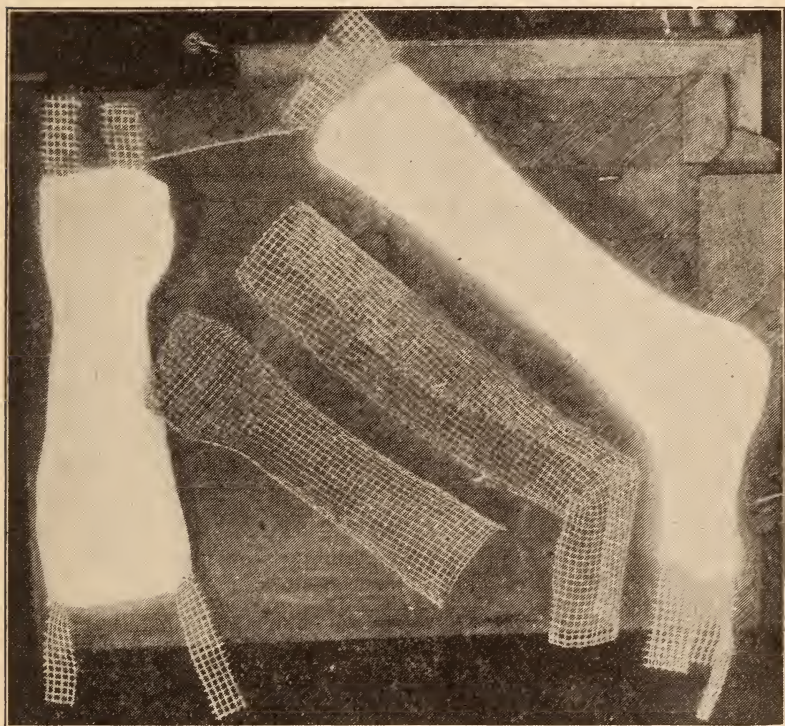
From these and other considerations it becomes apparent that the most important function of those who are in immediate charge of the wounded on the battlefield consists in the early and effective application of the first aid protective dressing, and in making use of safe temporary hemostatic measures which favor and expedite spontaneous arrest of hemorrhage without touching the wound. Fixation of the injured part constitutes one of the important indications of first aid, and it is conducive to healing by primary intention, and serves a useful purpose in averting unnecessary pain, and constitutes an important aid to the prophylactic measures against infection by immobilizing the injured tissues, and as an additional safeguard against displacement of the antiseptic dressing. In gunshot wounds of the soft parts, immobilization of the tissues by the well applied dressing and muscle rest by slings, body bandage, etc., will suffice. In gunshot wounds of the chest and abdomen, firm circular compression by a cartridge belt, or gunstrap, will limit the movements of the chest and abdominal walls, and by doing so will diminish or arrest the bleeding, and expedite later the healing process. Immobilization is of the utmost importance in the treatment of gunshot wounds of the long bones. The ideal fixation splint in such cases would be the plastic plaster-of-Paris splint, but this method of fixation is entirely out of the question at and immediately behind the firing line, and must be reserved for the first dressing station or the field hospital. The fixation dressings on the field must be extemporized and must necessarily consist of material which is always at hand.

In fracture of the long bones of the extremity, the opposite

limb can be made use of as a splint, using a cartridge belt, gun-strap, suspenders, handkerchief, and articles of clothing for bandages. The rifle, bayonet and saber are always available, and can be used to advantage as temporary fixation splints. A fractured humerus can be immobilized by fastening the arm to the side of the chest. A well padded bayonet and sling will meet the mechanical indications in fractures of the forearm. Tin, gutta percha, wooden and tin splints should never be employed in military surgery. The only splint worthy of consideration at the front is the wire netting splint which can be cut in proper shape and moulded to the injured part, and later can be utilized in the form of strips in strengthening the plaster-of-Paris splint. The wire netting cut in the shape corresponding to the fixation of the different fractures of the limbs should be carried to the front by the Sanitary Corps in sufficient quantity to answer the expected requirements. Splints made of this material, well padded, will answer an excellent purpose as a first aid fixation dressing, as they can be made to fit the surface of the limb by moulding them into the desired shape. They are cheap and light, and can be cut into the desired shape with an ordinary wire-cutting scissors. At the first dressing station, or in the hospital, when a permanent fixation dressing takes the place of the temporary one, they can be cut into strips, about an inch in width, and of the desired length, which are incorporated in the plaster-of-Paris dressing. I know of no material better adapted for this purpose, as the meshes of the wire netting permit of intimate incorporation of this material in the plaster, and it is easily moulded into proper shape, and contributes much to the firmness and durability of the permanent splint.

So far we have been considering the most essential first aid service which should be rendered at or near the firing line. For reasons which have been stated before, the major part of such service in all great battles must be performed by non-professionals, by the combatants and the Sanitary Corps. All available military surgeons will always consider it a duty and a privilege to take care of the most important cases and supervise the work at the front; but the most important place for skilled aid is the first

dressing station, the primary depot of the wounded. This should be established in a sheltered place as near as possible to the fighting line. The value of the services of medical men in battle cannot be overestimated, and they should be protected as far as possible against the fire of the enemy. Here the wounded will receive the full benefits of modern military surgery, as they will be



Wire-Netting and Plaster-of-Paris Splints for Fracture of the Forearm and Leg.

brought under the care of medical men, assisted by well-trained members of the Sanitary Corps. Among the things which should never be done here, much less where wounds are inflicted, I wish to emphasize the next proposition:

Probing of recent gunshot wounds must be prohibited by the most stringent regulation.

A recent gunshot wound is not to be touched under any circumstances, as the undisinfected finger is a much more dangerous means of infection than the bullet itself. If modern surgery condemns the touching of the wound with the finger, it prohibits in a more emphatic tone the use of the probe. Long usage has made the employment of the probe in searching for bullets such a common and fixed practice, that it is exceedingly difficult to eliminate it entirely as a diagnostic aid on the battlefield. Probing a practically aseptic gunshot wound in the light of recent war experience must be regarded as a grave infringement on the best methods of treatment of such injuries. Its diagnostic value is of little consequence, and at the present time overshadowed entirely by the use of the x-ray. The present use of the probe in the examination of gunshot wounds must be limited, exclusively to suppurating wounds, and if a bullet or other foreign substance is lodged in the tissues, and then only as a subordinate diagnostic aid to the employment of the Roentgen ray. The layman of to-day has as much faith in the use of the probe as a means of detecting and locating a bullet lodged in the tissues as our ancestors had a hundred and more years ago, and manifests the same anxiety for the extraction of the foreign substance. The people, and more especially the soldiers, must be made to understand that the presence of a bullet is not necessarily a source of danger to life and function of the organ or part in which it is lodged. The probe should be excluded from the limited instrument supply in the pouch of the members of the Sanitary Corps and should never be employed by the surgeons except in exploring fistulous tracts of suppurating gunshot wounds, when such method of examination is deemed advisable for the detection and location of foreign substances, and to determine the direction and extent of the fistulous tract or suppurating cavity.

5. *Under no circumstances should attempts be made to remove bullets until this can be done under strict aseptic precautions in the hospital, and then only in such cases in which such operation is clearly indicated, and the exact location of the bullet has been determined by palpation through the intact skin, or by the use of the x-ray.*

The military surgeon as well as the surgeon in civil life must educate his clientele to the effect that bullets can remain in the tissues and become encysted, where they can remain indefinitely without causing any serious disturbances, and that any attempt at its extraction is often out of question as the bullet may be lodged in a locality inaccessible to a successful and safe operation. For instance, it is never advisable to search for and make attempts to remove a bullet from the cranial cavity in a recent gunshot wound of the skull, as the conservative treatment in such cases has proved more successful than a resort to operative measures. On the other hand, in suppurating gunshot wounds grave operations are often justifiable in reaching the suppurating focus and in removing the cause of the infection in the form of fragments of clothing, detached or necrosed bone, or a bullet. The Roentgen apparatus has become an indispensable diagnostic aid to the military surgeon, and as such should constitute an essential part of the equipment of every military hospital and hospital-ship, and men especially trained in radiography should always be available.

6. *The most important duties of the surgeons at the first dressing station.*

a. *Inspection of first aid dressing.*—The first aid dressing applied in the field needs inspection and if need be, revision when the wounded reach the receiving or ambulance station. If the dressing is found in proper place, and the injured part or limb properly immobilized, a label to this effect is affixed to the dressing, in order that the dressing may not be unnecessarily removed when the patient reaches the hospital. The highest aim of military surgery must ever be to attain healing of the wound by primary intention under the first dressing, and change of dressing must be reserved for cases in which the nature of the wound or failure of the first dressing has resulted in infection. If the dressing is found defective, it must be renewed and more securely fastened in place.

b. *Permanent fixation.*—The first dressing station is the proper place to make use of plaster-of-Paris as a fixation material for fractured limbs, more especially in cases of fracture of the low-

er extremities. The wire netting splints are cut into strips which are incorporated in the plaster-of-Paris dressing, thus securing as nearly as can be done by external support perfect and permanent immobilization of the fractured limb, a matter of the greatest importance in securing rest for the injured tissues and placing them at once in the most favorable condition for a speedy and satisfactory repair.

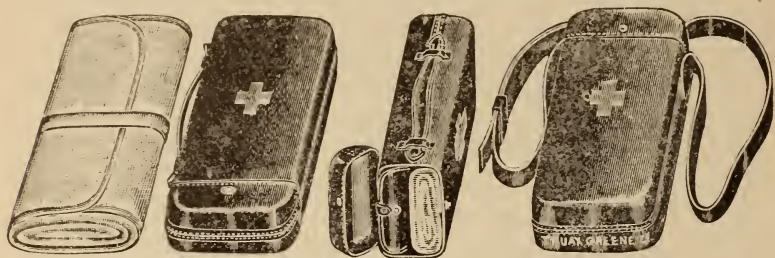
c. *Emergency Operations.*—The operative treatment of gunshot wounds in the field outside the hospitals must necessarily be limited to the most urgent cases. The definitive arrest of dangerous external or internal hemorrhage stands preeminent in the list of emergency operations. If elastic constriction has been made use of in the field, the constrictor must be removed and hemorrhage arrested by ligation of the bleeding vessels or aseptic tamponade. Iodized catgut is the proper ligature material for field service. Intra-cranial and intra-thoracic hemorrhage should not be interfered with outside of a well-equipped hospital. In cranial wounds the perforations are exposed by cutting the hair short to the scalp by displacing it in all directions away from the wound when the first aid dressing is applied over the perforation, and held in place by a gauze bandage, which can be made more secure by rubbing into its meshes on the external surface cream of plaster-of-Paris. Penetrating gunshot wounds of the chest are protected against infection by careful dressing of the wound, and the respiratory movements reduced to a minimum by immobilizing the chest with circular strips of adhesive plaster or a gauze bandage snugly applied. In penetrating gunshot wounds of the abdomen life-threatening hemorrhage from any of its vascular organs or vessels of the mesentery calls for prompt operative interference. Abdominal section under such circumstances in a tent may contribute much in lessening the mortality from hemorrhage by a resort to ligature, suture, or aseptic tamponade. By pursuing this aggressive course some lives will be saved by prompt interference which would be lost by the let-alone treatment. Wounds of the larynx and trachea which have given rise to respiratory difficulty either from emphysema or hemorrhage call for an immediate tracheotomy. Resection as a primary

operation for penetrating gunshot wounds of joints has become for substantial reasons an obsolete operation. Amputation must be reserved for cases in which a limb has become mangled by a cannon ball, fragment of shell, and in cases in which the gunshot fracture is complicated by severing of the principal blood-vessels and nerves. Laparotomy in the field for gunshot wounds of the abdomen, with a view of finding and suturing perforations of the gastro-intestinal canal, has not yielded in practice the anticipated results, and hence must be restricted to exceptional cases. Experiments, as well as clinical experience, have shown that in a fair percentage of cases penetrating wounds at and above the level of the umbilicus, inflicted in an antero-posterior direction, do not implicate the gastro-intestinal canal, and in such instances conservative treatment yields better results than the operative. On the other hand, in wounds in the small intestine area, more especially when the bullet has taken an oblique or transverse course, we may confidently expect to find from three to fifteen perforations, and it is in this class of cases that immediate laparotomy offers the only chance of saving life.

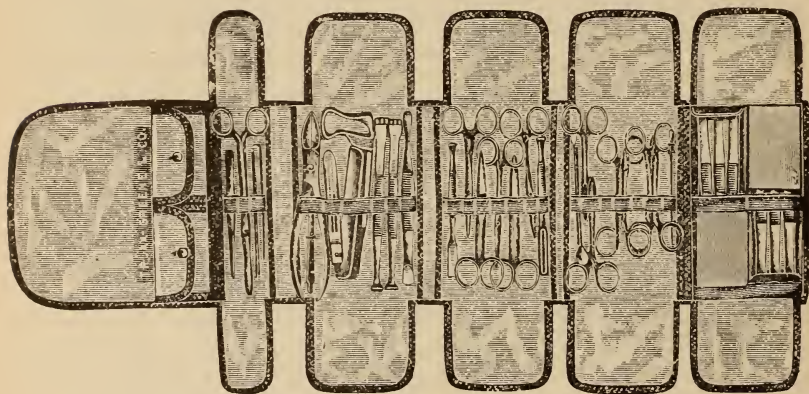
7. *Instrumentarium of the Surgeon in the field.*

The Surgeon's field case should be light, compact, and the instruments wrapped in a canvas roll, so that instruments and envelope can be quickly sterilized by boiling in soda solution. The surgical work of the surgeon in the field must of necessity be done with as few instruments as possible, and which he must carry in a compact aseptic case, which, with its contents, can be sterilized in the simplest manner and in the shortest possible space of time. Wooden and metallic cases are impracticable for this purpose. Canvas cloth is the proper cover for the instruments. A number of years ago I devised and described a compact operating case, which I take the liberty of presenting to you for inspection. It consists essentially of two washable canvas rolls, with the names of the instruments stamped on the cloth with indelible ink, in order to facilitate the replacing of them after use. One of the rolls is kept in reserve in the case, and as it is sterilized it can take the place of the one which has just been used. Sterilization of roll and instruments, after exposure to in-

fection, can be effected in less than ten minutes by boiling in a one per cent carbonate of soda solution. The form and character of the outer wrapping of the canvas roll holding the instruments are of the greatest importance. It should be light, soft and flexible, without any sharp corners, and small enough to be carried in the coat pocket. The outer cover of my field case is made of



The Author's Field Case.



The Author's Field Case Open.

soft leather, with rounded ends and corners, with a double compartment, one for the roll of instruments, the other for the empty canvas roll. A slip handle, also of leather, is provided, so that, the case can be carried like a hand-bag. For military service a leather strap is attached, so that the case can be carried over the shoulder. The six knives to protect the edges are included in two metallic plates that rest side by side, forming one fold of the

canvas roll. The case with contents weighs four and a half pounds. All of the instruments are small, and the selection has been made with a view to answer the requirements of all emergency operations. Special attention has been given to provide a sufficient number of hemostatic forceps. This operating case recommends itself for field service and all kinds of emergency work, on account of its small size, compactness, lightness, asepticity, and the simplicity with which the canvas roll and contents can be sterilized and the ease with which the instruments after using them can be returned to their proper places in the canvas roll.

THE CAUSE OF BERI-BERI OR KAKKE.

THIS disease, having caused so many disabilities in the Japanese army, has called forth much discussion. Some authors state the total number of cases of Kakke which developed in the army during the period of the Russo-Japanese War as at least 75,000. In Japan although many high in authority, as Prof. M. Miura and Baron Takaki, believe the disease one of malnutrition as evidenced by results in the navy, yet many others now believe it caused by a micrococcus. Dr. Maximilian Herzog, of the Biological Laboratory, Manila, has given in *The Philippine Journal of Science* the results of his investigations both in Japanese hospitals and in Manila. He refers to the previous work of Surgeon General Okata and Surgeon Major Kokubo, who have isolated from the urine of beri-beri cases a coccus, which gives the agglutination test. Dr. Herzog, having worked under these bacteriologists, has experimented in Manila on monkeys inoculated with the Okata-Kokubo coccus. But his results as yet are not encouraging.—C. S. BUTLER.

BERI-BERI OR ALCOHOLIC NEURITIS?

By JAMES S. TAYLOR, M.D.,

PASSED ASSISTANT SURGEON IN THE UNITED STATES NAVY.

DURING a three years stay in the Far East, the time being about equally divided between the Philippines and Japan, I gave much time and thought to the subject of beri-beri, read much literature on the theories of its causation, including the exhaustive and rational treatise by the distinguished officer and scholar at the head of the Medical Department of the Japanese Navy, and made a point of going to see every case that I had access to. While cruising in all parts of the Philippine archipelago, during a period of many months when my ship was at anchor off Cavite, while on duty at the Naval Hospital there and at Yokohama, Japan, and in the course of my work as Medical Examiner for the New York Life Insurance Company in Yokohama and vicinity, I had an opportunity to see many many cases of supposed beri-beri, of real, undoubted beri-beri, and many natives of both the Philippines and Japan who had undoubtedly had the disease in the past. As a result of what I saw, read and pondered on in that time I was forced to the conclusion that a large proportion of the cases reported in the official returns of the Navy Medical Corps, and perhaps this is true also of the Army, as beri-beri, were improperly so called.

As this subject necessarily is of far reaching interest and importance not only from the abstract standpoint of science but in the interest of the Government by whom the writer and the bulk of the readers of this publication are employed it has occurred to me to open a discussion of this subject in these columns my own humbly proffered remarks being intended simply to provoke an expression of opinion from the many in both Services more competent in every way to speak authoritatively.

As far as I know, I am alone in holding the view, which is

the one I am anxious to hear discussed, that, if not all, at least a majority of the cases of nerve affection reported as beri-beri, in *officers and men of the American military services in the Philippines*, and in American civilian employees at Cavite and Manila, were improperly so designated and that they were cases of multiple neuritis not due directly to endemic causes but to a variety of other causes among which alcohol was by far the most prominent. Of course this is not a pleasant view to hold and nothing would be more gratifying to the writer than to be convinced, and he is perfectly open to conviction, that the neuritis commonly seen among our people in the Philippines is really of the endemic variety peculiar to certain parts of the East. Of course it goes without saying that because a man drinks heavily or only indeed, persistently, we must not ascribe any and every physical affliction from which he may suffer to that as a cause. On the other hand to be honest and unbiased requires that we should say to ourselves whenever the question of "origin" presents itself, "What would be the natural supposition in this case, if no question of pension, retirement, reputation were involved; if the only matter at stake were the man's recovery and the aetiology were a detail of scientific interest only?" A little reflection suffices to reveal how largely considerations such as these affect our viewpoint without our being conscious of it. We must train ourselves always to disrobe the question of all collateral features with the same Brutus like firmness with which we unhesitatingly dispose of many of a sick man's statements and of the anamnesis in the face of physical facts and the irrefutable testimony of physical signs.

If it is true, as I believe, that the chief consideration in regard to the Philippine climate is the necessity of taking increased care of the health while under its influence, and the compelling need of a stricter observance of hygiene and dietary than is absolutely requisite at home for the enjoyment of at least moderate health, if the consumption of alcohol compatible with health at home is on a scale far in excess of what can be safely consumed in the tropics, in the Philippines in particular, then it is a serious sin of commission for the Medical Officer to indulge himself or others in the misconception that the excesses of which, alas, too

many are guilty are without result, and it is a sin of omission to fail to indoctrinate the laity on the subject of hygiene of the tropics, by which is not meant enforcing flannel belly bands or wholesale administering of quinine in advance of infection or prescribing some patent type of underdrawers for the avoidance of "dhobie itch."

It is assumed that we are all reasonably familiar with the history of beri-beri and the various theories as to its causation which have been put before the medical world up to date without apparently satisfying conservative investigators of a judicial turn of mind. It is likewise assumed that the possibility of identity of symptoms in a case of beri-beri and alcoholic neuritis will not be denied. The following summary, however, is appended for a graphic reminder and presentation of the salient points involved:

ALCOHOLIC NEURITIS.

Abstention from liquor generally cures.

Largely independent of hygienic surroundings except in a general way, as depreciated vitality always predisposes to sickness.

Attacks the steady "moderate" drinkers of good "moral" reputation who are horrified at the suggestion that they have anything "alcoholic" the matter with them.

BERI-BERI.

Often curable; removal from endemic area desirable.

Apparently absolutely dependent on hygienic conditions. Specific cause seems favored in a marked degree by dampness, darkness, dirt, poor food, overcrowding, bad ventilation. Attacks natives rather than foreigners in endemic area.

Cases may be of all grades of severity in either type—from mild leg pains to wide spread paralysis and final death.

Nerve reactions, trophic disturbances, cardiac and renal symptoms may be identical.

Now in a case of suddenly developed wrist and foot drop with neuritic symptoms in a habitual user of arsenic or after an acute poisoning by an overdose, where systemic effects were produced later, no medical man would call the case beri-beri simply because it occurred in the Philippines. Nor, again, would it be due to anything but carelessness if a case of polyneuritis which developed in the course of one of the severer types of infectious fevers, of which it may well be a complication or a

sequela, were designated beri-beri because it occurred in the tropics with nothing in particular to make it a probable case of the latter disease. Such a case of carelessness in nomenclature did actually occur some years ago in the Asiatic Station where an officer had a very bad attack of polyneuritis after a severe case of bubonic plague. This officer had, for months before he contracted the plague occupied with his wife, sunny, bright second story quarters at Cavite. This suggests how easily, without intending to misrepresent things, the mental view point may become warped, for, in the case in question, as the patient was strictly temperance and as the primary disease was absolutely a "line of duty" one there was no call on the Board to be charitably self-stultifying.

In my experience of so-called beri-beri in the Navy the majority of cases were among officers, either commissioned or warrant. Invariably the sufferers who were enlisted men were hard drinkers. One I remember particularly, because, whenever encouraged in the period of convalescence to leave the compound and take exercise he returned to the hospital drunk and suffered an exacerbation of symptoms on the morrow.

As a rule, however, the enlisted man in the Navy who drinks does so rather heavily and at infrequent intervals, because each excess is followed by restriction to his ship for a period of weeks or months, and that generally means an enforced abstention. The officer, on the other hand, may drink when and generally where he chooses and of course it is the daily "tot" rather than the quarterly debauch with its accompanying vomiting, diarrhoea, etc. so apt to clean a man out pretty thoroughly, that produces in the long run the systemic poisoning of alcohol whether on kidneys, liver, brain, stomach or general nervous system.

In view of the history of beri-beri in the Japanese Navy it seems strange that none of our ready diagnosticians of beri-beri in the American military personnel should have paused to consider the striking difference between the hygiene of the enlisted man and the officer on our ships, as bearing on the topic now under discussion. The living quarters of the former are always and necessarily inferior in the matter of floor space and cubic air

space, and although improvements are constant we all know how far from ideal the hygienic surroundings of the enlisted are on the best man-of-war in any navy. We should naturally expect that any disease associated with poor hygiene would develop most conspicuously among the enlisted men; that on the other hand one ascribable to regular, moderate, prolonged consumption of alcoholics would be commonest among the officers.

Manson, in scouting the idea that rice, fish or other food deficient in nitrogen ("nitrogen starvation" theory) is the prime causative factor in the production of beri-beri, insists that coincidently with the reformed dietary in the Japanese Navy, and to this improved dietary was ascribed by a great many the remarkable change from the condition of almost universal beri-beri to a very fair standard of health, there were made sweeping changes in the general mode of life of the Japanese crews, radical reforms along the line of hygiene and sanitation to which the great diminution of beri-beri must be ascribed.

In regard to quarters ashore I know from my own observation that however lacking in comforts, in attractiveness, in the features that make a home, the dwelling places assigned to our naval officers in Cavite, Zamboanga, Isabela, Pollok, were at least not of a character to prejudice the health of those occupying them. The rooms in the Palace, the Bungalow, the San Felipe barracks, at Cavite were large, airy and in most cases well raised off the ground, and possessing sunny exposures. At Isabela officers lived in what had under the Spanish regime been a well conducted hospital, built out from the shore on piles or else in the old fort high up on the hill. These abodes were bare and none too commodious but no one ever made any complaint about the wisdom of occupying them on the score of health. The life in Subig in my time was largely in tents and it was a common thing to hear the officers stationed at Olongapo boast about their good quarters. For several years now officer's wives have been living in Cavite, Olongapo, Pollok, exposed to all the endemic influences of these localities and perhaps by reason of housekeeping duties, in sewing, making clothes, taking an interest in schools, school children, and their native surroundings have been brought into even closer

contact with the native element than their husbands. However that may be I have yet to hear of a case of beri-beri reported in an American woman in the Philippines. That they suffered from the effects of the climate and that they sooner or later showed deterioration of health from it no one who has lived there can forget. Indeed it is among the American women living in the Philippines that we see best illustrated the typical results on a foreign born of residence in the tropics. The severe strain of the continuous round of dinners, dances and social functions, the heat which made exercise difficult and perhaps even undesirable, the general enervation which followed from their never feeling the bracing tonic of crisp, autumnal air, frost, snow, showed in our women by pale cheeks and languor, sometimes in unusual irritability of temper, loss of appetite and a disposition to recover slowly or imperfectly from minor ailments that at home would have been thought trivial but there required medical attention for protracted periods. While there may have been and doubtless were many exceptions it may be accepted as a rule that the question of prolonged alcoholic indulgence did not enter here to any appreciable extent.

To sum up, then, we find that the enlisted man is the one who on account of inferior accommodations and surroundings would naturally be expected to suffer the oftenest from beri-beri, while everything would predispose the officer, the steady, regular, if moderate drinker, taking less exercise, and thrown but little into such close association with the native as to render him susceptible to the same untoward influences of bad hygiene, to develop, if any, an alcoholic type of neuritis. From the fact that every case of neuritis known to me in the East occurring in officers was in men who made no pretence to total abstinence, I can but regard the use of the generally adopted nomenclature as an error. That cold, exposure, exhausting conditions may bring on neuritis is undeniable, and not every case wrongly called beri-beri is necessarily alcoholic, but it is a neuritis merely and not dependent except remotely on the local conditions, or climate in the sense that real beri-beri is.

The officers who acquired what in my opinion was alcoholic

neuritis belonged to all grades and all corps and performed the most varied duties under the most dissimilar circumstances the only constant feature in every instance being that the victim used alcohol in some measure. Given the baleful influence of a tropical climate in creating a distaste for exercise or making it difficult to engage in and the fact that prolonged residence in the Philippines tends to produce some depression of spirits with the inevitable temptation to seek solace in the fluids that both cheer and inebriate, given all this, I say, the chances are that the drinking was in excess of the narrow limits of safety.

How the commanding officer of a good ship, dwelling in a large, commodious cabin, well lighted and well ventilated, even if somewhat hot, who when on shore in China, Japan or the Philippines frequented good hotels and fine clubs, who when he drank water at all had at his command the best distilled water or carbonated water, who did not associate with poor natives, dwell in their overcrowded, filthy hovels, or suffer confinement in noisome dungeons or break down in hard marches in wet and cold, could acquire the beri-beri or kakke of which we learned from the books before we ever saw the Philippines and which we thought of as a distinctly local malady, unique, an entity sui generis, is a mystery. Nor is it any easier for me to comprehend how other officers almost equally well off physically speaking, who occupied sanitary quarters ashore, had very little if any definite association with natives under native conditions, worked a definite and generally moderate number of hours daily in suitable offices could acquire a disease so peculiarly a place and local sanitation, and race disease—one always before in the history of medicine so definitely marked off by geographical and ethnological limits. No, the only conclusion to which I for one can come is, that, if none of our medical officers themselves drank, and that if only those officers drank who from long sojourn in the tropics had gradually lost vigor, appetite and strength, and then only a little (the physiological little that helps digestion, etc. is so vastly less than the "small drink" of the most abstemious drinker) and if further our medical officers could appreciate the unfortunate consequences that must sooner or later accrue from the false kindness of glossing over the truth, kindness to a few in the immediate present and gross neglect of the great interests at stake for the many and

for the future, then beri-beri would disappear from our nosological tables.

The honest and interested reader might offer one objection to the postulates of this paper on which I have felt that a good deal might be said. "How does it happen," he might ask, "that alcoholic neuritis as you would have us call it is relatively so common in the East and so infrequent in our personnel at home?"

To this I would reply that, in my opinion, if rare in the service, and it may be, the disease alcoholic neuritis is by no means rare among civilians. A service on the staff of any of the large city hospitals in America will prove it. Such cases were very far from uncommon in the Medical wards of Charity Hospital, New York, during my two years service there. In private practice I saw several cases of varying severity, I had the luck to cure one or two cases of supposed "rheumatism," "neuralgia" by enforcing abstinence from liquor.

Our patients in Charity were almost entirely drawn from the lower and poorer walks of life, many the victims of hardships and exposure and hunger. Their systems were impoverished to the last degree and it is not surprising that the effects of alcohol in them should have been strongly marked, even as the ravages of syphilis are greater in those whose forces have been decimated by dissipation, excesses, etc.

Perhaps the general lowering of the body tone, the loss of vigor, the increase of susceptibility to disease that affect the foreigner in the tropics are in regard to the ability to consume alcoholics with impunity analogous to the effects of hunger and cold on my patients at Charity. It may properly be added that we had there cases fully as severe as the spurious beri-beris among our people in the East. One case in particular that I recall with painful vividness because in a woman, a chronic alcoholic, because a fatal case, exceeded in severity anything that I saw or heard of in the Orient in our service. The "origin" here was plain.

It is this last feature of the matter that gives this subject its chief importance in my eyes. It is the fact that the name, the false idea of its mode of origin, the pitiful picture presented by the victim of a bad attack, his helplessness, the absolute need of long nursing, of seeking a better climate, all tends to give a

glamor of romance, almost to throw over the sinner a hero's mantle which he is far from deserving, making a condition of severe punishment inflicted by violated nature attractive, admirable. We hear so much talk, so much misplaced sympathizing, so much wonder, horror of the much villified Philippine climate, suffer so much from ignorant volubility on the part of the tender hearted ladies and the patient's friends generally, that there should be no surprise at the really fashionable character the ailment is assuming. The recovered subject of an attack speaks invariably in a grandiloquent manner of "my attack of beri-beri," he adduces it with pride as a part of his medical record and drags it in whenever an occasion offers half a chance to discourse on the horrors he has gone through (for his country is implied). It is questionable in my mind whether the old residents along the abandoned James River canal were ever any prouder of the malarial chills from which they used to suffer—chills being naturally an attendant glory of everyone who belonged in any way to the tide water stock in contradistinction to the people of the ultramontane sections.

If there is any truth in the line of thought I have set forth in this paper then it is pitiful to see men and women expending either smiles of pride or tender tears of sympathy on the beri-berite. If there is any truth in what I believe then the medical officer is building for himself a position from which he can in the future be most disagreeably assailed, not from official sources only, which when impersonal are not by any means the most difficult to bear, but by the individuals who may later acquire the disease in question and may very properly feel themselves aggrieved at the ignorance or incapacity or indifference which cloaked offences for others and now refuses to cloak it for them; at the failure to give warning, at the permitted misconception of the facts.

When all has been said we are back to the old and well known position maintained by all tropical authorities on the danger of alcohol in the tropics. There is a good deal to be learned and explained and probably a good deal that will not soon be explained about alcohol and its widely varying effects at different times, in different places on different people but it has little to do with the aetiology of the polyneuritis that we have to consider in our reports from the East.

BERI-BERI AND DHOBIE ITCH: A FEW REMARKS ON THEIR ETIOLOGY AND TREATMENT.

By JULIUS M. PURNELL, M.D.,

CONTRACT SURGEON IN THE UNITED STATES ARMY.

BERI-BERI is a specific form of multiple peripheral neuritis occurring endemically, or as an epidemic in most tropical and subtropical countries. The mortality is considerable, death being due usually to heart paresis (Manson).

This is, perhaps, one of the most common and far reaching diseases that we find among the native inhabitants of tropical countries, and, fortunately, it is very rare among the Caucasian races.

Etiology.—Beri-beri is no respecter of persons, attacking the rich and poor of both sexes impartially. It occurs at all ages, preferably between fifteen to thirty years. A debilitated constitution is not a predisposing factor. That beri-beri is a place disease there is little doubt, and in this respect it resembles malaria. Its habitat is, as a rule, in overcrowded places, and it is fostered by dampness and a high temperature. It is most common in those houses that are near the ground. It is also very frequent in shops, jails, asylums and among all such aggregations of humanity.

That it is a germ disease there seems to be little, if any, doubt, but that it is transmissible from person to person is questionable. I am of the opinion that it is decidedly not, for how else can we account for the fact that patients living for months in the same ward with all types of beri-beri cases have not contracted the disease. The cases that I have seen have proven to my satisfaction that it is not infectious.

The possibility of the germ being carried from place to place and under suitable conditions multiplying seems plausible and is borne out by statistics.

The theory that seems to be most reasonable is that of Mason: "Beri-beri is caused by a toxin generated by a germ living in the patient's surroundings." It is a well known fact that when patients are removed from the place in which the disease was contracted a marked improvement occurs. This seems to indicate that it is the place and not the patient that is infected. Just what this toxin is, is not definitely known, but it is possibly generated in the soil. I do not concur with Pekelharing and Winkler's theory, that there is a bacterium in the blood, although it is claimed by them that they have succeeded in cultivating it. I have examined the blood of several hundred cases, and have not yet been able to find any bacteria, neither have I been able to obtain a culture. I have repeatedly inoculated lower animals with blood serum from different types of beri-beri, but with negative results.

That the disease is due to the nitrogen starvation, another theory, is hardly plausible. As to the influence of a starchy diet I am unable to say, but an exclusive rice diet may be a predisposing factor. Comparing the two food theories: The food of the ordinary Filipino is known to consist largely of rice and other carbohydrates, yet he is, as a class, very susceptible to this disease. On the other hand, take the native scouts, the ration furnished them is composed largely of nitrogenous elements and still we find about the same susceptibility to this disease. What would be the natural inference from this?

Indian writers have attributed the cause of beri-beri to almost all of the known diseases, even malaria. There is a condition seen in the Philippine Islands caused by malaria that is almost impossible to differentiate from beri-beri, except with the aid of the microscope. These cases present more or less edema, associated with a slight neuritis, and yet the presence of malarial parasites in the blood proves it to be malaria, unless there might be a mixed infection.

I think that the etiology of beri-beri can be summed up as follows: It is caused by a germ which lives in the patient's sur-

roundings generating some sort of a toxin which, being inhaled or swallowed by man, produces in him a specific neuritis.

Treatment.—The first and most important thing to be done is to remove the patient from the place of infection to some dry locality, well off the ground, in a thoroughly ventilated room, admitting plenty of air and sunlight. He should be properly clothed and have a nutritious diet consisting largely of nitrogenous and fatty elements.

As to the medical treatment, all sorts of drugs are recommended: digitalis, strophanthus, nitroglycerine, quinine, strychnine, iodide of potassium, magnesium sulphate, etc. I have found it a good plan of treatment to give all cases of beri-beri occurring in this country large doses of quinine. All persons here suffer more or less from malaria and after this is eliminated from the system it is much easier to handle the beri-beri.

The heart complications should be carefully watched; strychnine is usually sufficient. In suddenly developed attacks inhalations of nitrite of amyl with hypodermic injections of nitroglycerine should be used. One of the most important symptoms and the first to be looked for is the scanty urine. I have usually employed Basham's mixture for this, but recently I have tried agurin and theocin with excellent results. I usually give theocin until from 1,500 to 2,500 cc. of urine are passed in twenty-four hours, then it is discontinued and the patient given agurin. I find that these two drugs are all that could be desired in handling this very serious complication. The bowels should be kept soluble with magnesium sulphate in full doses. For the atrophy of the muscles and anesthesia of the skin faradization seems to give the best results.

DHOBIE ITCH.

This disease is very common in the Philippine Islands and has been most annoying to the army on duty here. The suffering which some of the forms give rise to is often very great.

The expression "dhobie itch" is applied to most types of itching, ringworm-like affections of any part of the body, the

locations being usually the crutch or axilla, commonly the former.

There are at least two species of parasites causing this disease; the trichophyton and the microsporon furfur and minutissimum.

Treatment.—Many remedies are recommended but few are of much importance. The usual ones are Vleminck's solution of sulphuret of calcium, tincture of cassia alata, chrysophanic acid ointment, glacial acetic acid, linimentum iodi, saturated solution of salicylic acid in alcohol, camphophenique, and many others. Of late I have used with marked success epicarin in ten per cent ointment. This causes a desquamation of the superficial epidermis, but is not in the least painful and is sure in its result.

WEIGHT AND HEIGHT OF RECRUITS.

AN investigation on the weight and height of recruits was conducted at Copenhagen in 1903 by Dr. Sören Hansen (*Militærlægen*). The weights were taken upon a Fairbank's scales in kilograms and the stature measured in the Danish inch, which is equal to 2.62 cm. 3,600 men of the age of twenty-two were examined, of whom 1,808 were accepted and 1,792 were rejected. The former had an average stature of 64.96 inches and an average weight of 62.91 kg.; the latter were 64.78 inches tall and 60.85 kg. in weight. The more acceptable men were a trifle taller, while the rejected were of nearly the same average stature. But their average weight was more than 2 kg. less than that of the serviceable men. A great number were rejected on account of general delicacy. The weight is not a constant accompaniment of height and certainly not directly proportionate to it. The under-weight was found in connection with all heights. There were more men unfit for military service among the tallest and shortest than among those of medium height. The mean weight of a foot soldier was nearly 1 kg. lower than was to be expected from their average heights, while the better appearing men were generally heavier.—HANS DAAE.

A BRIEF SKETCH OF THE EVOLUTION OF THE
MEDICAL SERVICE OF THE BRITISH ARMY.

By COLONEL W. J. R. RAINSFORD, R.A.M.C.

PRINCIPAL MEDICAL OFFICER AT BERMUDA.



SINCE I first joined the British Army Medical School at the Royal Victoria Hospital, Netley, some twenty-nine years ago, it has constantly been my ambition and hope to visit the United States, and when I exchanged a year ago to serve in Bermuda I had that object in view.

My hopes and ambitions in this respect have now been consummated in a manner quite beyond my happiest dreams.

To have been selected by our Army Council to represent the British Army and more specially the Corps to which I have the honor to belong at this Conference I consider one of the brightest rewards of my service; notwithstanding that I cannot conceal from myself that circumstances rather than personal merit have favoured my good fortune.

When I received an invitation from your Secretary to contribute a paper upon some medico-military experiences I at once thought of the relief of Pekin in 1900 where I had the honor to be the Senior Medical Officer present with the British forces and where I had the advantage of the friendship of, and association with many of the officers of your Army, amongst whom I may mention the name of Major Frank J. Ives, Chief Surgeon to your Army there. I can assure you that our relations with your people there from our private soldiers, to the Commanders of our respective Armies, might be more truly described as fraternal than cousinly. I have here a token of it to show you. This is the insignia of the American Military Order of the Dragon, of which I am an honorary member.

I therefore do not feel that I have come among you as a

stranger although it is my first visit to American soil. But I fear I am digressing. After a period of five years one is apt to forget details except in which "ego" largely enters and I therefore at first decided not to commit myself by reading a paper; I however the same day looked over the copy of your JOURNAL of April last which your Secretary very kindly sent me, and came across the first portion of the Enno Sander prize essay for 1904, written by one of my oldest friends Lieutenant Colonel Hill-Climo, a friend who soon after I first joined took me into his house and nursed me like a father when I was very ill and to whom I probably owe my life.

The essay no doubt in many respects is a very able one but when I find these words in the opening paragraph: "Notwithstanding the progressive development of Sanitary Science, Medical Officers are not afforded much greater opportunity for putting it into practice than when sudden death was ascribed to the visitation of God," and other statements in a somewhat similiar strain, I quickly remembered that Colonel Hill-Climo had retired from the service twelve years ago.

I consider that it would be injurious to the reputation of our noble profession and more specially to the Medical Services of all civilized powers that their public opinion should entertain the idea that the Medical Service of the British Empire is "divorced" from the real power for good it should possess, or that its position is in any sense a subordinate one.

I therefore feel it my duty to give you a rough sketch of the evolution of the British Army Medical Service since I joined it, of the immense strides it has made towards efficiency and of the enormous advantages that have been of late years conferred upon it as regards facilities for study, increased pay, special pay for special work, and pay for responsibility, opportunities for original research, and also the opportunities it affords to men of talent and ambition for rapid advancement.

But before I commence my sketch you will excuse me if I take up your time with a more or less personal preamble that will however give you an insight to some of the influences that retarded our progress when I first joined.

As my father had been a combatant officer and three of my younger brothers held combatant commissions I had special opportunities for observation from a non-medical point of view. When my father joined the British Army he fortunately had some powerful family interest by which he obtained the privilege of purchasing a commission. Roughly the price paid in those days was £1,000 per step and therefore before he obtained the rank of Captain he paid about £3,000 for his promotion. His pay did little more than pay for his mess bill, band, and other regimental subscriptions; as an ensign it was only five shillings three pence a day i. e. one dollar twenty-six cents per diem, a private income was therefore a necessity besides the £3,000 he had already sunk in commissions.

It is therefore natural that men, the great majority of whom were of old, and influential family and whose private means were considerable should look on themselves as belonging to a higher caste than men who entered the Army to earn their livelihood. This purchase system was abolished in the year 1871 and since then combatant commissions in the Army have been open by means of competitive examinations. The same class of men to a very large extent still officer the combatant branches of the services and these caste prejudices died a very lingering death but I believe that at the present moment these traditions exist more outside the Army, than in it.

Up to about the year 1871 Medical Officers absolutely belonged to Regiments, were promoted in them by death or other vacancies and were absolutely under the orders of the Officer Commanding; they had little or no executive power beyond prescribing for the sick.

When after the Franco-German War the importance of increased mobility of troops in the field became more fully recognised, and that it was impossible for a Regimental Hospital to keep up with each unit in the field, the Regimental system was broken up. Medical Officers had to give up the uniform of the Corps to which they had belonged for years, with all its pleasant associations to adopt the uniform of the Medical Staff and to be attached to Regiments as circumstances arose. Commanding Offi-

cers were furious. The administrative Medical Officers had undergone a training as Regimental Surgeon that was calculated to unfit them for any post of responsibility or initiative and the rank and file of Medical Officers themselves were divided into two classes, those that welcomed the change, and those that did not.

The former class included men of individuality of character and ambition and whose opinions may have clashed with those of their Commanding Officers; and others who perhaps for other reasons were not quite at home in their Regiments as well as those who were happy in, and proud of their Regiments and resented any form of change for personal considerations; and to this class the majority belonged.

A dual system was then introduced, Seniors placed in charge of Hospitals, Juniors attached to Regiments but doing duty in Hospitals. A man cannot serve two masters and it was soon demonstrated that an impossible situation was created. The Officer Commanding the Regiment to which a Medical Officer was attached gave him one order and the administrative Medical Officer another, consequently it was found necessary to withdraw all Medical Officers from Regiments and place them solely under the command of the administrative Medical Officers, and at this stage of our evolution I joined the Army; that was in 1876 or 1877.

Our designation was then Army Medical Department, and our sick attendants and Hospital Staff, was called the Army Hospital Corps; we wore an absolute distinct uniform. The previous regimental training of our more senior officers so unfitted them for responsibility or business beyond that of purely medical character, that it was found necessary to create from the ranks of the Army Hospital Corps, a special rank of Officers known as Captains and Lieutenants of orderlies. For instance the senior non-commissioned officer in a Military Hospital was responsible to them for all Hospital equipment, not to us, and if one of my men committed an offence I had to appeal to them to punish him, besides this he arranged for their pay and clothing, etc.

Our next important advance was made in 1877-1878 when a fuller scheme of war work was drawn up for the Medical Service

based on experience gained in the American, and other wars and embodying the laws of the German medical war scheme of von Moltke and his school.

By it, Regimental Aid, the Regimental Ambulance Detachment, the Divisional Bearer Company, the Field Hospital, the Communication Hospitals, the Base Hospitals, and the Hospital Ships, were developed in a far clearer light and an enormous step was made towards war efficiency.

The last few sentences I quote from an old pamphlet I have come across which was written many years ago by now Surgeon General Evatt, C. B., a man to whom our service is indebted beyond measure for its evolution and to whose successful efforts our country owes to a great extent the existence of a Volunteer Royal Army Medical Corps organization.

Afterwards followed Royal Warrants giving us further powers and rights.

In 1882 on my return home from five years in India and Egypt, officers of orderlies had become Quartermasters and the discipline of our men, including all sick in Hospital, and Officers, non-commissioned officers and men attached, had been handed over to us.

In 1884 we became the Medical Staff and our men the Medical Staff Corps, our uniform was changed to correspond with theirs and by this closer association we were brought into greater sympathy with our men.

In 1891 we obtained mixed medico-military titles from that of Surgeon-Lieutenant to that of Surgeon-Major-General. These titles carried the precedence and other advantages attached to the military portion of our rank but did not entitle the Officer to military command the Presidency of Court Martials, Courts of Enquiry, Committees, or Boards of Survey outside their own command.

In 1898 our designation was changed to Royal Army Medical Corps, full military titles were granted to us and pretty well all the powers of our brother Officers in the combatant branches of the service, except commands outside our own Corps. With the exception of District, and General Court Martials, we are eligible

for the Presidency of all Boards, Committees, and Boards of Enquiry.

In one respect I have now come to an end of our evolution. The provisions of the Geneva convention preclude our having any further power of command.

As regards our advisory powers in sanitary matters it is difficult to define them so accurately. Their extent must always be modified by their practicability; as regards funds available, strategical and other good reasons; the individuality of the Officer suggesting them is also a powerful factor.

All I can say is that in my personal experience I have always met with cordial assistance both from Commanding Officers, as well as General Officers, in adopting recommendations calculated to improve the health and welfare of their men.

On the other hand as reports upon recommendations find their way to the War Office, they would incur grave responsibility should they not see their way to carry them out.

As regards the larger questions of Army Sanitation and Medical Mobilization involving large expenditure depending on the vote of our House of Commons which represents the tax payer, the tax payers must be educated to recognize their necessity.

This education has been advanced in a great measure by the beneficent lead taken by H. M. the Queen and the other members of our beloved Royal Family in works of charity with special reference to Hospitals, nursing and the better housing of the poor. The word "sanitation" has become in itself fashionable. During a long personal interview some two years ago I was perfectly astonished at the extent of practical knowledge of the detail of the internal economy of a Hospital, and its general sanitary construction evinced by one of our Royal Ladies whose honoured name is no doubt familiar to many of those present today, especially our Canadian friends; I allude to H. R. H. the Princess Louise, Duchess of Argyll; and again it has been further advanced by the recent enlistment of civilian members to the advisory board of our Army Medical Services—men selected for their high standing in their profession whose opinion necessarily had great influ-

ence with the general public, with whom their names and repute are familiar.

Before the appointment of this Board among other things we had for years been shouting for opportunities for keeping in pace with the modern flood of advancement in medical and surgical science. We were certainly granted the privilege of passing examinations for promotion, but reading books in our profession is not enough; you all know that practical training is absolutely necessary, indeed we have very often to be taught how to look at an object before we can see it.

Since they joined us we have not had to ask in vain. We may be jealous of them,—jealous that they have obtained for us what we failed to get without their assistance; we may fear a tendency on their part to forget the large questions of training for the field in the refinements of the advanced surgery and nursing as found in the larger of the London Hospitals; but in my opinion they have well qualified their appointment so far, and have brought us into greater touch with the great Medical Schools and Hospitals of the United Kingdom.

I will now briefly refer to the personal career of an Officer of the Royal Army Medical Corps.

After a young Surgeon has successfully competed for a Commission in the Royal Army Medical Corps he is sent to the Royal Army Medical College, London, for special instruction in tropical Medicine, and Military Surgery, etc. He then joins the Depot of the Royal Army Medical Corps at Aldershot, our largest Military Camp, for instruction in discipline, Company and Stretcher drill, and in the methods for training our men.

Before he obtains the rank of Captain he has to pass an examination in Military Law, Hospital internal economy, and his duties generally. At a convenient date after about six years service he is sent to the Royal Army Medical College to qualify for promotion to the rank of Major to keep up his knowledge with the advance of Medicine, Surgery, Hygiene, and Bacteriology, and in addition to which he has to take up one other subject as a Specialist. Should he succeed in obtaining a

sufficiently high number of marks in this subject he becomes eligible for a special appointment in it, and the extra pay.

These special subjects are:—

Bacteriology including preparations of antitoxins.

Dental surgery.

Dermatology including Venereal diseases.

Midwifery and Gynaecology.

Advanced Operative Surgery.

Ophthalmology.

Otology including Laryngology and Rhinology.

State Medicine.

For the rank of Lieutenant Colonel he is examined in the following subjects:—

Military Law

Army Medical organization in peace and war.

Sanitation of Towns, Camps, Transports and all places likely to be occupied by troops in peace or war.

Epidemiology.

The Laws and Customs of War as far as they relate to sick and wounded.

Medical history of the more important campaigns and a general knowledge of the Army Medical Services of other powers.

You will observe that he is not now called upon to be examined in purely medico-surgical subjects.

Beyond the rank of Lieutenant Colonel promotion is given entirely by selection. By the time a man has twenty years service the authorities should know a great deal about his practical ability, his tact, and his fitness to be a leader of others.

This system of selection has of late been exercised to a very large extent indeed, and with great general advantage. I am unable to tell you the percentages, but I know after I received my last promotion, of the ten men next senior to me only two were promoted, and when some other men have passed over my head I feel little ground for complaint; amongst them is our present Director General.

When I first joined promotion went almost entirely by seniority and the absence of any adverse report in the War Office records. Now it depends upon the ability, zeal, and tact of the individual concerned, more upon what he has done well than any mistakes he has made.

I will now refer briefly to our Nursing Service.

Our Queen Alexandra's Imperial Military Nursing Service of which Her Gracious Majesty is President, whose establishment consists of 342 members and whose existence we are largely indebted to Lady Roberts the wife of our late Commander-in-Chief, is composed of women selected from the larger Civil Hospitals on account of their high personal character and distinguished qualifications as professional nurses,—a body of whom we are justly proud.

When I joined we had no nursing sisters, all our nursing was done by men. I first made their acquaintance at Alexandria in 1882 after the defeat of Arabi Pasha's insurrection. War, *Horrida Bella*,—the license to murder our fellow men and to be proud of it is demoralizing,—demoralizing to an extent that can hardly be appreciated by those away from the theatre of war, or by most of those present still intoxicated by its effects. After the battle of Tel-el-kebir I came down from Cairo to Alexandria for embarkation. I visited our Base Hospital there, and was intensely impressed by the presence of our "sisters;" Sister is a sweet name. Our Junior Sisters are called Staff Nurses, I wish the title did not exist. There were very few of them, but their presence—the presence of women of the right class socially, with an average amount of tact, amongst a lot of men, hardened and demoralized by the cruel experiences of war,—has an indescribable influence for good, for order, for discipline, and for a sense of homely security and rest.

As teachers of nursing duties to our men they are invaluable but in my opinion there are limits beyond which they should not be employed in our Military Hospitals in peace.

In the actual field as compared with Base Hospitals they cannot to a large extent replace our male nurses, they are as a rule incapable of standing the physical strain that men can stand, their sex unfits them for the bivouac, and more important still if their numbers are too great in a Hospital in time of peace, their zeal is apt to deprive our men of the opportunity of such practical work as the dressing of wounds and application of bandages, the management of wards, and of exercising initiative; and

so in this manner takes from them the higher interest in their work which greater responsibility would stimulate. Besides this if their numbers are so great that their duties include anything approaching Ward Maid work our short service men will hold them in less esteem and their influence for good, and efficiency will be checked.

In my opinion in each Hospital in peace their duties should be confined to teaching, and to the nursing and supervision of the nursing in special Medical and Surgical Wards for the more serious cases, and that the other wards should be entirely nursed and carried on by Royal Army Medical Corps non-commissioned officers and men trained and taught by them; such a system would promote healthy competition and under such a system I have seen our men paying for flowers, etc., out of their own pockets to make their wards as smart looking as those of the Sisters next door. We must remember above all things that male nurses practically don't exist outside the Army. We have to make them,—we can't get them ready made as we do our nursing sisters.

Our Officers number about 1,000, our men about 4,000 with the colors, 1,000 with the reserves.

In addition we have attached to us twelve Militia Companies Royal Army Medical Corps, and thirty Volunteer Companies Royal Army Medical Corps, besides which there are ten Bearer Companies attached to a corresponding number of Infantry Volunteer Brigades. Besides these the St. John's Ambulance Brigade numbers 2,500 and there are 800 trained female nurses in the Army Nursing Reserve.

Over one third of our Officers are employed with our European Army in India. The men of our Corps do not however serve in India. They are represented there by the Assistant Surgeons of the Indian Subordinate Medical Department—a most excellent Service—by the Native Army Hospital Corps and by the Native Army Bearer Corps.

There is also an Indian Nursing Service similar to our Queen Alexandra's Imperial Nursing Service (Q.A.I.N.S.).

The Officers of the Indian Medical Service are quite distinct from the Royal Army Medical Corps. They number about 735,

somewhat over one-third of their number and employed with our Indian troops, the remainder are seconded for employment in Civil appointments such as Medical Schools, Civil Hospitals, Jails etc.; they are also assisted by the Indian Subordinate Medical Service. They are however liable to recall to Military Service in time of War. Our men receive much higher pay than in Regiments.

At present when a man joins the Royal Army Medical Corps he is enlisted for three years with the Colors and nine with the reserve, and is at once sent to the Royal Army Medical Corps depot at Aldershot, from three to six months, for technical training in discipline, Stretcher, Ambulance and Infantry Squad Drill, Elementary Anatomy, First Aid to the Wounded, Bandaging, Ward Management, Field Cooking, Field Hospitals including tent-pitching, etc.; they are next sent to the Cambridge Hospital at Aldershot for practical instruction in Ward work after which they are posted to the Sections to which they show the greatest aptitude and then distributed to various stations.

The men of the Corps are divided into four Sections viz:—Nursing, Cooking, Clerical and General duty. Every possible inducement is offered to the men to join the nursing section as regards extra pay, facilities for accelerated promotion, etc. A man is not eligible for higher promotion than that of Sergeant in any Section, but to obtain higher rank than that of Sergeant he must have qualified in the Nursing Section. There is a class of men who with training and experience become really first class nurses, who may not possess the personality necessary to become good non-commissioned officers. For such a class, the membership of Queen Alexandra's Imperial Nursing Service is now available; the appointment to which, carries with it a special rate of pay, a special decoration, and a certificate which practically insures them employment as male nurses at a high rate of pay in civil life at the expiration of their term of Army service.

In conclusion I must remind you that in this paper I have purposely omitted any reference to our shortcomings. It is better that you should hear what progress we have made than the defects that still exist in our Service.

I also wish to state that this paper was written in Bermuda at a short notice without the advantage of books of reference. I hope therefore that you will forgive any mistakes I may have made.

I need not tell you that after my return to Bermuda I will be glad to explain to any of my audience that may care to ask me more fully the detail of any question I have touched upon.

I must say how much I thank you for your kind patience in listening to me so long and how much I appreciate your cordial reception.

DISCUSSION.

LIEUTENANT COLONEL N. S. JARVIS, N.G.N.Y.—Officers of our army will recall that our struggles were similar to that of the English army. Herbert Spencer in his *Synthetic Philosophy* makes a remarkable statement in reference to feudalism, that it is nowhere more evident than in the English army, where the medical officers are subject to ostracism by the line, the late survival of military caste. What are the social relations in the English army between the medical and line officers? Is there any ostracism, or are they received as any one else? Are medical officers assigned to quarters?

COLONEL RAINSFORD.—Officially the medical officer is the same as a line officer, but they are in some instances ostracised. The medical officer now can displace any other officer for his quarters should he so choose.

THE TEETH AMONG SOLDIERS.

BRIEF instructions upon the teeth and their care, says C. E. Ekeröth (*Tidskr. i mil. Hälsovård*), should be printed and posted in each company quarters. Every soldier should have an opportunity to buy a good and cheap tooth brush. A clinic for diseases of the teeth where soldiers could receive treatment should be furnished at Stockholm. The teeth of soldiers in the country should be cared for by private dentists. Every year at the beginning of the mobilization, the teeth of the soldiers should be examined by a dentist. Dentists might work out a part of their service as military dentists.—HANS DAAE.

ORGANIZATION FOR INSTRUCTION IN COLONIAL MEDICINE.

BY M. LE DR. BROUARDEL,
PROFESSOR OF THE FACULTY OF MEDICINE OF PARIS
AND M. LE DR. WURTZ,
IN CHARGE OF COURSE AT THE INSTITUTE OF COLONIAL
MEDICINE AT PARIS.

TRANSLATED BY SURGEON SHELDON G. EVANS, U. S. NAVY.

IN the last twenty years the nations of Europe have conquered large colonial possessions. Some, for instance Belgium, Germany and Italy had no colonies, while others, England, France and Russia in particular have added immense territory to their possessions beyond the seas.

These colonies, situated in the most diverse climates have their own pathology and distinct diseases common amongst their inhabitants.

The responsibility of the nations owning such colonies is great, in regard to the inhabitants of the places under their control. They should furnish them with capable physicians and supply them with necessary medical attention of the best character. The natives of the colonies are not the only ones in whom their interests should center; colonization will not in itself develop if the health of the persons who leave home to locate in these other climates is exposed to too much danger.

It is necessary that they find in the colonies competent physicians, thoroughly instructed in the diseases there prevalent and capable of formulating rules of hygiene which will protect them individually and collectively. It is not only to the future colonists that this applies; a farmer or merchant establishing himself in a colony is morally responsible for the care of the employees and workmen associated with him.

His material interests are also at stake, for if the place in which he settles is not helpful, if the conditions of life in such

climates (new to his co-workers) are not well regulated, the success of the enterprise is soon compromised and failure is courted. These failures are soon known and they discourage those who are ready to follow the pioneer and the future of the colony is menaced.

What is true of private enterprises is generally true of governments. The home government should be directly interested in that which concerns the colonist. Soldiers are provided with medical aid and attention and the home government should also look out for the health of the colonist. This is not the least of the responsibility.

As the commerce of the colony increases with the home country, the diseases of the tropics are liable to extend; certain of these diseases formerly considered exclusively indigenous and rarely seen at home, become a constant menace; immunities of race disappear and diseases of the tropical zone are observed at home more and more frequently, not only in the form of great epidemics but numerous cases of parasitic and microbic diseases little mentioned in the treatises on medicine.

The interests of the home country then become one with those of the colony and instruction in colonial medicine forces itself upon us.

The greatest efforts in this line have been put forward by England. The considerations which have guided this colonial nation par excellence, have been set forth in the following terms by a medical journal, "to rule a portion of the tropical world as vast as that conquered by Great Britain, to look after its needs as well as the interests of the Empire, and to know and conquer the enemies of its progress, the germs of infectious disease."

The General Medical Council begged to have instruction in tropical medicine added to the course; acknowledging the importance of this demand, but in view of the already too considerable extent of the curriculum, the Medical Board voted against it. It was on this account that London, then Liverpool established schools of tropical medicine. This example was soon followed by Hamburg, then by the Universities of Bordeaux and Paris. The reports of our colleagues on the establishments in Eng-

land and Germany have treated with great success of this important question. We shall occupy ourselves solely with those schools of tropical medicine in France.

These are three in number, Marseilles, Bordeaux and Paris.

THE INSTITUTE OF COLONIAL MEDICINE AT MARSEILLES.

The medical school at Marseilles established in 1899 a course in tropical medicine and this year, thanks to the municipality, has created four new chairs, as follows:

Foreign Pathology and Bacteriology.

Foreign Clinic.

Colonial Natural History,

Colonial Hygiene, Climatology and Epidemiology.

These four courses have been in operation since their creation. Marseilles is the point of union between France and the colonies of the intertropical zone. The passengers and crews of her vessels furnish to the hospitals 1,800 sick a year, and it is this fact that makes her envied from the viewpoint of instruction in colonial medicine.

The course is carried on at the Hotel Dieu and there are two courses each year: one from January to April and the other from April to July.

A certificate in Colonial Medicine is given to those who have completed the course and passed the final examination. Both physicians and pharmacists are admitted to the course. Besides the Institute of Colonial Medicine, Marseilles has another course of instruction for explorers, missionaries, merchants, etc. This is a Colonial Institute established through the initiative of Professor Heckel, by the Chamber of Commerce. Instruction is given by eight chairs in all the sciences relating to the exploration and administration of possessions beyond the seas. A colonial museum completes this important work and a museum of colonial hygiene is in process of construction.

THE COLONIAL INSTITUTE OF BORDEAUX.

The Colonial Institute of Bordeaux was started in 1901-2. Instruction comprises a course of studies lasting two months and a half, from the middle of November to the end of January. This course is divided into clinical and practical laboratory work.

The clinical instruction is given conjointly by the professors and the chiefs of service at the various civil and military hospitals, and by M. le Dantec, Professor of Foreign Pathology.

The practical work is divided among a large number of professors, (more than thirty) each treating of a subject or subjects for which he possesses a special training.

The following table will give a complete idea of the course of instruction.

I. CLINICAL INSTRUCTION BY THE CHIEFS OF SERVICE AND M. LE DANTEC.

II. PRACTICAL WORK.

M. Cassaet—Histological technique.

M. Ferre—General bacteriological technique—carbuncle—typhoid fever—bacteriological analysis of water—serum diagnosis—cholera—plague—diphtheria—rabies.

M. le Dantec—Anatomical specimens—haematozoa—mosquitoes—filaria—Malta fever—culture of anaerobes—tetanus—septicaemia—amoeba in dysenteric stools—mycetoma, etc.

M. Coyne—Tuberculosis—lesions of organs in malaria and leprosy.

M. Sabrazes—Haematology.

M. Layet—Disinfection—vaccination.

M. de Nabais—Protozoa—intestinal worms—examination of urine and feces for parasites.

M. Beille—Leeches—arachnides—venomous insects—poisonous fishes—reptiles.

MM. Jolyet and de Nabais—Poisons and their analysis.

MM. Jolyet and Sigalas—Action of physical agents on the organism.

M. Villar—Operative surgery of the liver, intestines and spleen.

M. Deniges—Clinical urology.

MM. Cannieu and Gentes—Anthropometry—Craniology.

M. Lande—Criminal anthropometry.

M. Bouard—Microphotography.

III. LECTURES.

M. Layet—Hygiene and prophylaxis of colonial maladies—intertropical climatology—influence of hot countries upon the European organism—medical geography—sanitary legislation.

M. Moriche—General hygiene of colonial troops on station and on expedition
M. Bergonie—Clothing.

M. le Dantec—Colonies—colonization—malaria and its transmission by mosquitoes—haemoglobinuric fever—dysentery and diarrhoea of hot countries—abscess of the liver—yellow fever—beri-beri—elephantiasis—ainhum—European fevers in hot countries.

- M. Dubreuilh—Dermatozoa—ixodes—argas—Guinea worm—oriental sore—tokelan—pinta—goundou—pian, etc.
M. Arnozan—Leprosy—medicine case for the tropics. ,
M. Hobbs—Tuberculosis in hot countries.
M. Regis—Mental maladies in hot countries.
M. Auché—Poisons.
M. Pitres—Intoxications by opium, cannabis indica and their derivatives.
M. Cassaet—Alimentary intoxications—scurvy.
M. Mongour—Insolation—heat stroke.
M. Lagrange—Tropical ophthalmology.
M. Chavannaz—Surgery of the liver.
M. Denucé—Surgery of the spleen.
M. Pousson—Special genito-urinary surgery.
M. Moure—Parasites of the lungs.
M. Gentes—The human races.
M. Beille—Instruction in collecting and transporting ethnological and natural history specimens.

IV. PUBLIC CONFERENCES.

At the end of the course examinations are held, which if successfully passed entitle the student to a diploma in colonial medicine of the University of Bordeaux.

Situated in a large port, possessing numerous lines of steamers communicating with the African coast and having a corps of instructors of the first order, the Colonial Institute of Bordeaux has a bright future. The resources in colonial diseases which this situation is able to procure is only exceeded by Marseilles. This year eighteen regular students were enrolled and twelve obtained the diploma.

THE INSTITUTE OF COLONIAL MEDICINE AT PARIS.

This institute is actually in the second year of its existence. Its foundation is due to private enterprise and among the number contributing should be especially mentioned M. Chailley-Bert, Secretary General of the French Colonial Union, and Professors Brouardel and Blanchard. Its continuance is assured by M. Doumer, Governor-General of Indo-China who, in 1901 granted it an annuity of \$6,000.

The Institute is attached to the Faculty of Medicine of Paris and the greater part of the instruction is given in the Faculty buildings.

There are three chairs, experimental pathology, parasitology and hygiene and added to these are supplementary courses in surgery, ophthalmology and dermatology. There is a hospital which receives the patients used for clinical instruction.

The first series of lectures commenced on October 16th and ended December 22nd, 1902. Twenty scholars attended and of these seventeen completed the course and fifteen passed with success and received the diploma.

The twenty students were classed as follows, twelve doctors of Medicine, three internes of hospitals, five students of the fifth year. Four of the scholars were women.

The duration of the course has been somewhat less than two and one-half months, during which time the students had sixty-three lectures or courses of practical work and twenty in the supplementary classes.

In the afternoon, from October 16th to November 8th, Professor Chantemesse gave instruction in bacteriological and haematological technique in his laboratory, with practical work after each lecture. Professor Blanchard instructed in parasitology every day from November 8th to December 5th, and MM. Proust and Wurtz gave a course of lectures in diagnostic bacteriology and hygiene in the laboratory of the Faculty.

All of these courses were given in the afternoon, the morning being devoted to didactic lectures and clinical lectures at the bedside, and to these were added the supplementary courses on important specialties; surgery of the Tropics at the Necker Hospital by Prof. le Dentu (six mornings), diseases of the eye by Prof. la Personne at Hotel Dieu, tropical dermatology by M. Jeanselme at the Hospital St. Louis.

The success which has attended this first course of lectures at the Institute of Colonial Medicine of Paris would seem to bear strong testimony against the opinion, so much advanced of late, that a non-maritime city cannot be made the center of instruction in colonial medicine. The principal objection is the scarcity of foreign diseases but this objection has not been sustained. Paris is after Marseilles, perhaps the city of France which contains, not counting the 120 lepers, the most foreign diseases and pathological rarities.

Of course it is true, as stated by Prof. Treille, that from the standpoint of clinical instruction it were better to give the instruction in the colonies themselves, but this is impracticable for a variety of reasons.

We must not moreover overlook the fact that in all classes of diseases called pestilential,—cholera, typhus, yellow fever, plague etc., clinical instruction is as impossible in Marseilles or Bordeaux as in Paris, for those sick of these diseases are isolated in the lazarettos or other similar institutions.

The fact that in Paris one sees only convalescents or chronic cases is no longer an argument. M. le Dr. Amerlink, in his excellent paper recently published by the Colonial Institute of Paris, has remarked with much justice that “a physician in the colonies often finds himself in the same position as one at home, his patients do not reach him for weeks or perhaps months after the beginning of the disease or when the affection has become chronic; this is easily explained by the fact of the long distance the patient has to travel or that the acute state of the disease will not permit the patient to be transported.”

It is useless to enter into more details but we must reach the conclusion that Paris finds itself as well provided with clinical material as the maritime cities.

The enrollment of so many students in the first year shows in an eloquent manner the confidence they have in the resources of Paris.

The colonial expansion in which we have been taking part in the past few years is a sure guarantee of the future for the young civil physicians who, breaking away from habitual routine are seeking new fields.

We sincerely trust that the public and those interested in the success of the colonial institutes of France will not permit them to fail or go backwards.

Such then is the position of France in regard to instruction in colonial medicine; at first other nations were ahead of us but we think, now that we have taken our place, we can readily stand comparison with other civilized nations.

Our country is alive to the needs of those who are willing to

expatriate themselves and colonize in new climates and among new diseases.

It is necessary to assure the health of these pioneers of civilization, first by warning them of the numerous dangers they must encounter and then permitting them, should they fall sick, recourse to the best of care by physicians well instructed in tropical pathology.

This is what the three institutes of colonial medicine in France, those at Marseilles, Bordeaux and Paris, are striving for at the present time. Their independent organization, the productive and healthy rivalry among them and the support of the universities of which they are a part, permits us to hope for a brilliant future for them and for the same success which has already attended institutes of colonial medicine in neighboring countries.

NOTE.—In presenting the foregoing translation of the able article read at the Brussels meeting of the International Congress of Hygiene, I feel that the subject is one of prime importance and it is my earnest hope that the paper may bring out a free discussion, for it is with this end in view that it is presented.

It seems to me that our country is sorely lacking and far behind other nations in this important work of instruction in Colonial Medicine.

True, we have in both the Army and Navy medical schools, courses in tropical diseases but few are privileged to attend them. It has been one of my earnest wishes to see the Army and Navy medical schools combined and civilians permitted to attend the courses, especially the Medical Officers of the National Guard and State Forces. In fact it seems to me that a great advance would be made by combining the Medical Corps of the Army, Navy and Public Health Services into one large Medical Organization headed by a Secretary of Public Health, who would be a member of the cabinet.

All medical men in the service of the Government could be placed in this National Medical Corps, educated at a Government Medical School and detailed for such duty as required.

I hope to be able to present a paper upon this subject to the Association in the near future.

Contemporary Comment.

THE RATION OF THE JAPANESE SOLDIER AND BERI-BERI.*

TRANSLATED BY LIEUTENANT SAMUEL M. DELOFFRE,
MEDICAL DEPARTMENT, U.S. ARMY.

A LETTER from Tokio, published in the *Gazette de Cologne* gives some interesting details on the garrison and field ration of the Japanese soldier, with special reference to Beri-Beri. For a long time the soldier's ration has been different from what it used to be. It has become half Europeanized for the purpose of increasing the physical strength of the combatants. The simple meal of rice is no longer served out to the troops, ordinarily; the custom now is to give them rice and corn, experience having shown that rice alone predisposes, especially in summer, to Beri-Beri or Kakke. The soldier is given meat and fish in addition. Breakfast consists of boiled rice and corn, bean soup and some vegetable preserved in salt. Dinner consists of fish or boiled meat, rice and corn, cooked vegetables. Supper the same. Besides this the soldier can buy bread at the canteen (white bread), also a sort of sweet biscuit called "Katapan," as large as the palm of the hand and as thick as the little finger. On New Years day, on the anniversary of the foundation of the empire by the first Mikado Jimmo Tenno (660 years before Christ), and on the anniversary of the birth of the reigning Mikado, the troops receive a particularly good allowance, comprising a soft rice cake (motchi), a white cake, a red cake, and katapans.

So then fish, meat and corn constitute the garrison ration, which is far superior to the ordinary food of the Japanese people.

*Translated from the *Archives de Medecine et de Pharmacie Militaire* for and published by courtesy of the Second Division of the General Staff of the United States Army.

The non-coms. and the privates have the same ration. The canteens also sell rice, beer, wine, tobacco, cigarettes.

In the field the soldier carries rice and salted prunes in his haversack. He also carries a bamboo tube filled with water. The company provision distributes beside this; vegetables, dried and compressed, dried fish, rice and cigarettes, in small quantities.

The government is keeping secret the new kitchen utensils: they are said to be made of compressed paper, rendered non-combustible by a chemical process; they are carried in the haversacks.

Some one may ask what is the practical use of the liquid called chojou. It is not so much an article of food as it is a preventive of Beri-Beri. From time immemorial, beans and corn, which contain a great deal of nitrogen, are considered in China and Japan to be a most efficacious remedy against Beri-Beri. If Takaki's opinion, that Beri-Beri is caused by an exclusive rice diet, is no longer considered sufficient to cause this disease, still it is admitted that insufficient feeding, and particularly the absence of nitrogenous foods, constitute predisposing causes, because they diminish the organic resistance.

It was observed that when vegetable foods, rich in assimilable nitrogen, such as corn and barley, were substituted for rice in the food of the Japanese, they were less liable to the disease. This opinion is so widespread in the endemic regions of Beri-Beri that from the point of view of receptivity the people are divided into two classes; those who eat corn, usually the rich; and those who eat rice, usually the poor. Whether the nitrogenous diet combats the particular poison of Beri-Beri, or whether it protects the nervous system from its action is not settled. (Notes on Beri-Beri in the Malay peninsula, *Cambridge Journal of Hygiene* January, 1904, Herbert and Durham).

It must be recognized however, that this opinion is not accepted by all. Ishiguro does not believe in the alimentary origin of Beri-Beri, and substantiates his opinion with the fact that Beri-Beri is unknown in certain parts of China and Indo-China where rice constitutes the sole food, and also with the fact that the use of meat in Japan has not diminished the cases of Beri-

Beri, which on the contrary, are increasing in number. Mirua attributes it to the noxious action of certain dried or salt fish. However, it is a fact that Beri-Beri is very common in the Japanese army; and to give an idea of this we will quote some statistics which are none the less instructive because they are old:

In 1884 the total number of cases was 10,215, or 276.3 per 1,000 of the effective. Beri-Beri constituted 134.2 per 1,000 of the total annual sickness. The number of deaths was 209, or 2.05 per cent of 5.6 per 1,000 of the effective, and 479 per 1,000 of the total annual mortality.

From what we know of the health of the Japanese army from the beginning of the Russo-Japanese war, it appears that this terrible disease has never stopped in its ravages, from Vafangou to Liao-Yang, during the whole period of the war. If we recall that this disease, which strikingly resembles an alcoholic polyneuritis, has among its symptoms, oedema, cardiac involvements, dyspnoea, fulminating pains, paralysis, amyotrophic and psychic disorders, and that its duration is long, and the mortality from 2 to 45 per cent, it will be easy to imagine how much its ravages were felt during the latter months. Ishiguro, however, noticed that life in the open air seemed to diminish the number of cases, on account of the increase of oxygen. But other factors came into play also, for intense cold and dampness seem to have a real influence upon its development. Generally speaking, Beri-Beri seems to be above all a disease of unhygienic conditions. It would be interesting to know whether the Russian army is also affected with this disease, though its food is very different. We presume that it is not, because race plays an important role; the black and yellow races being very susceptible, the Caucasian race not at all.

The Japanese soldier eats white bread, and it seems that his physical strength is not diminished by this, if we consider the energy he displays in action. Lehman concludes that there is little hope of ever making men eat a bread that contains much bran, and of obtaining useful results.

Medical Inspector Chauvel judiciously remarks that if, according to chemistry white bread is less nourishing than brown

bread, its physical properties make it easier to digest and to assimilate, and thus it is more nourishing.

We wish to express the wish that the Japanese bread the "Katapan," and even the "Chojou" be introduced into our army. If this latter does not constitute a sovereign remedy against Beri-Beri, it is none the less a food of the first order, and produces heat and energy, both of which are not to be disregarded in the field.

RECENT REPORTS ON PROPHYLAXIS AND CURE OF BERI-BERI IN THE DUTCH INDIES.*

TRANSLATED BY MAJOR CHARLES WILLCOX,†
SURGEON IN THE UNITED STATES ARMY.

THE researches of MM. Eykman and Gryns on the polyneuritis of fowls have shown that the anatomic-pathological basis of this distemper is identical with that of beri-beri, while the clinical symptoms of the two affections are very similar. M. Gryns conceived the idea of trying, in a therapeutic way, the fruit of the *phaseolus radiatus* L, that the Malays call katzany-idjo. The results were very encouraging; katzany-idjo had a prophylactic and a curative effect on the polyneuritis of fowls.

The results obtained by M. Gryns with fowls, caused M. Roelfserna, Military Surgeon of the Dutch Colonial Army, to try katzany-idjo on patients afflicted with beri-beri, and here also the results were most happy.

In examining the literature, it appears that even in 1747, Rumphius, Dutch physician, was familiar with the curative virtues of katzany-idjo. The Japanese have for a long time used Aduki or Adsuki, a variety of bean. Experiments made in the Botanical Gardens of Buitenzorg (Java), have shown that aduki is a *phaseolus*, that differs in many ways from katzany-idjo. The Japanese physicians who have prescribed aduki have not derived much benefit from it and its use is far from being extensive.

*Translated from *Le Caducee* under the direction of the Military Information Division of the United States Army General Staff.

†Dr. J. Hulshoff Pol.—Beri-beri Voorkoming en genezing door toediening van Katzany-idjo (*Phaseolus radiatus* L). Amsterdam, J. H. de Bussy, 1904.

To M. Roelfserna is due the credit of having made a methodical study of the influence of katzany-idjo on beri-beri.

An epidemic of beri-beri breaking out in the sanitarium at Buitenzorg, of which M. Hulshoff Pol is chief, furnished him the opportunity of studying carefully this disease and verifying the assertions of M. Roelfserna.

M. Hulshoff Pol treated a great number of patients, in the most varying conditions of the disease and took care to make control experiments. He believes that he is justified in reaching many conclusions of which the principal ones are:

1. Katzany-idjo has a most remarkable influence on beri-beri of a recent date; when the disease has progressed to the stage where there is degeneration of the peripheral nerves, its influence is nil.

2. Albuminuria and oedema (that are independent of one another) disappear rapidly during the administration of katzany-idjo.

3. The favorable effect of the administration of katzany-idjo begins on the fifth day.

4. Katzany-idjo has a sure prophylactic action.

5. The ulterior effect of the use of katzany-idjo is not felt for a long time, whence the necessity for a prolonged course of treatment.

6. The necessary daily dose of katzany-idjo is about 150 grammes.

7. The active principle of katzany-idjo is not found in the aqueous extract, and M. Hulshoff Pol has not succeeded in obtaining it in a pure state.

COOKING WITHOUT FIRE.*

WHEN an army is in the field, camping perhaps for the night or resting on their arms in trenches, in the presence of the enemy, it is out of the question to establish elaborate cooking facilities. It is often impossible to maintain fires over which to cook the soldier's repast. Under the new system all this can be avoided by starting out in the morning with

*Reprinted with illustrations by courtesy of the *Army and Navy Register*.

food that has been placed on or in the cooking range at some convenient place of culinary operations. When meats, vegetables and coffee, for instance, have been cooked thirty minutes over a range or in the oven, they are placed in the fireless cooker, locked in, and this receptacle, containing enough food for the company at noon or at night, is packed on the Army wagons with the tent-

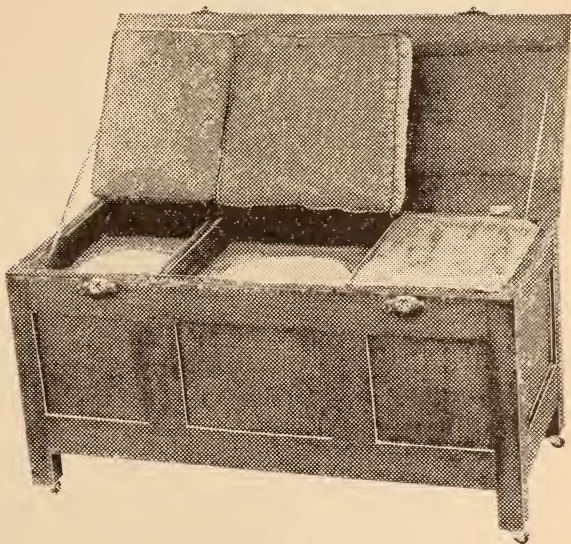


The Fireless Cooker.

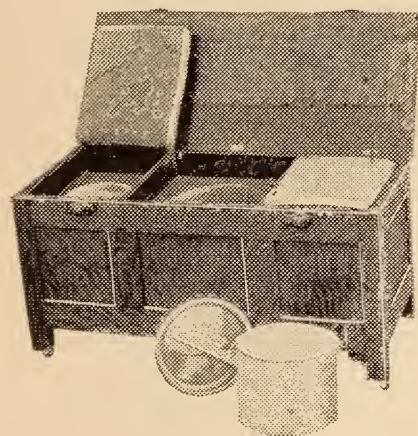
ture of 140 degrees; coffee seems to get hotter than anything else and has a temperature of 172 degrees after its period of imprisonment. In the Army tests two chickens, officially described as old and tough, were converted into something tender and appetizing by this process.

age, and follows the troops to the bivouac. There all that will be necessary will be the opening of the cooker and the removal of the articles of food. After a period of six or seven hours the meats and vegetables and the drinkables will be found to be fully cooked and palatable; roast beef will be at a temperature of 160 degrees, a ham will be hot at a temperature of 164 degrees, the vegetables will have a tempera-

The Army subsistence officers have been experimenting at Fort Riley with various types of the fireless cooker. One which has attracted much attention and gained official commendation is the "auto-cook," manufactured by the Caloric Fireless Cook Stove Company of Grand Rapids, Mich. Another cooker which has been subject



The Caloric Fireless Cooker.



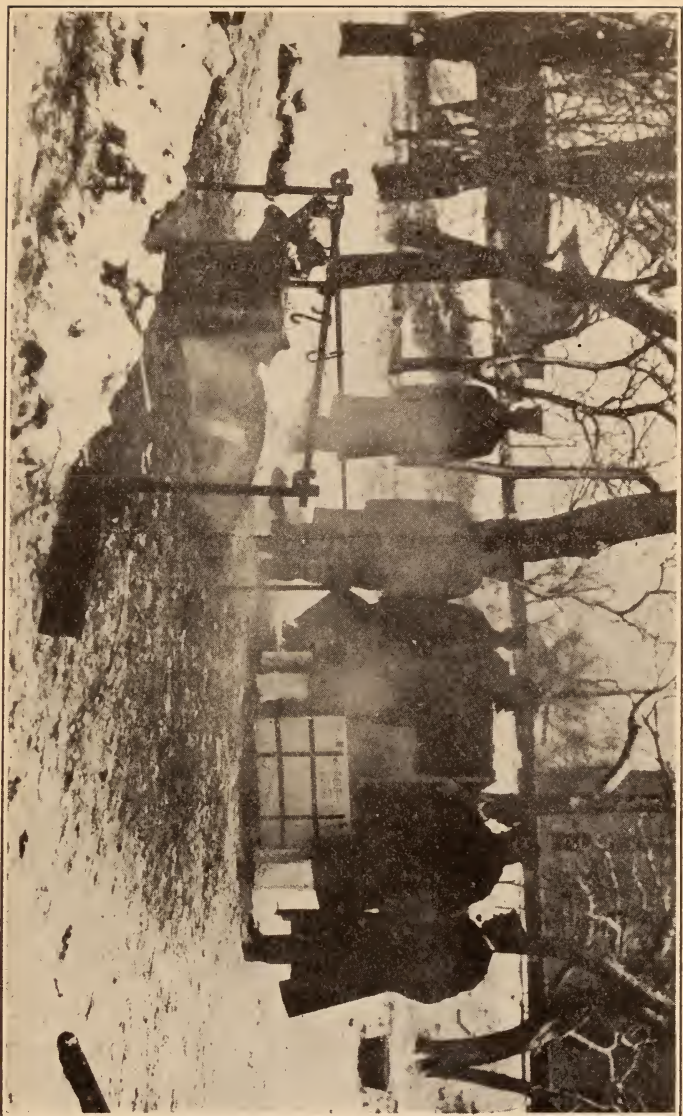
The Auto-Cook.

to test is that manufactured by the Fireless Cooker Company of New York City. The Caloric Fireless Cooker which is the subject of the accompanying illustrations is based on the scientific fact that save in hermetically sealed vessels it is impossible to raise the temperature of boiling foods above 212 degrees Fahrenheit, no matter how much gas or fuel is consumed under the vessel. The principle of the Caloric air tight cook stove is to retain the heat generated in an ordinary wood, coal, gas or oil stove in the scientifically insulated cabinet, or "cooking stove,"

as we call it. The food desired to be cooked is first prepared in the ordinary manner, and placed in the vessels with which the cabinet is equipped. It is then brought to a boil for a few moments on your ordinary stove, the cover of the vessel—a patented revolving bar lock affair—is clamped down and the vessel is quickly placed in the cooking cabinet and closed.

The vessels fit closely in holes or pockets in the cabinet, and are tightly surrounded to a width of two inches on all sides, top and bottom, by the best known non-conductor of heat, a thoroughly hygienic and scientific preparation. The surrounding atmosphere being unable to reach the interior of the vessels, the temperature is not lowered, and the food continues to cook until it is thoroughly and evenly done through and through, requiring about twice the time that would be required on an ordinary flame stove. But inasmuch as there is absolutely no consumption of fuel or gas and the cooking cabinet requires no further attention, the added time is far from a drawback. Furthermore, the food is not affected by a much longer stay in the cabinet, contrary to cooking on the open flames, inasmuch as there is no loss through evaporation.

Experiments made at Fort Riley by Captain M. S. Murray, Commissary U.S. Army, are reported as follows: "Fire was started at five a. m. in an open trench and after preliminary preparation of food all articles were placed in the utensils of the fireless cooker. At about 6.15 everything was over the fire, and at 7.18 the cooker was packed. The following articles, sufficient for eighty-five men, were prepared. Roast beef, macaroni and cheese, creamed potatoes, pork and beans, suet pudding and coffee. The breakfast for the detachment of bakers was prepared over the same open fire and during the same time that the articles for the fireless cooker were prepared. The breakfast consisted of fried potatoes, beef steaks, fried bacon and coffee. By the time breakfast was over the cooker was ready to be placed on wagon and ready to move with a command. No extra utensils had to be gathered, but everything intact. Eleven sticks of cordwood, all small pieces, were used in the preparation of both the breakfast and articles for the cooker. At 9 p. m. the cooker was opened



The Fireless Cooker in the Field.

Showing the cooking of food in the open, with the cooker in readiness to receive the provisions.

and the following temperatures were taken: Roast beef, 166 degrees; macaroni and cheese, 187; creamed potatoes, 174; pork and beans, 186; suet pudding, 165, and coffee, 172. Everything perfectly done. It will be observed that the temperatures are higher in this test than others; this is owing to the fact of all utensils being full of material.

"I can unhesitatingly state that the fireless cooker has proven to be a success, and I feel that were I equipped with a few pans for frying purposes I would be perfectly contented in starting out in field service that I would be able to feed an organization in first class shape under service conditions, and that the men of the organization would be very contented and satisfied.

"The use of the fireless cooker will eliminate the necessity of securing a large quantity of wood for cooking purposes. In fact, there would be no wood necessary in the evening for preparing the dinner, as the dinner and breakfast could be prepared in the morning with about one-fourth the wood now required by an organization for one day. Wood could be carried from one camp to another in an escort wagon for the next day's cooking. This will do away with the necessity of purchasing wood for cooking purposes at the various camps on a long march. The work of preparing the dinner on the arrival in camp under present system, which is, to say the least, a very trying ordeal for the cooks, especially during inclement weather, will be eliminated. After a long day's march a hot meal is furnished at once from the cooker to a tired and hungry organization by simply opening box and serving. Should it occur that the cooker is not required for use during the day for any meal, and that prospects of making a dry camp at night are evident, the boilers of the cooker could be utilized for holding water and it will be kept much cooler in the cooker than in any other way.

"The fireless cooker would be an excellent means to supply hot food to troops in a line of intrenchment, where the lighting of a fire is prohibited. The fireless cookers could be charged at the cooking tent, we will say about two miles to the rear of firing line, during the night or early morning, transported in wagon up to the line of intrenchments and passed along to various organi-

zations and they could at any time decided upon during the day be opened up and a good hot meal ready.

“The cooker designed by me, and with which I have been experimenting, appears to meet all requirements. I would suggest, however, that the two rear compartments only be supplied with the double boiler, or ‘casserolle’ arrangement, for roasting purposes, leaving the four other compartments for food to be boiled only. The covers of the boilers must be improved on to avoid the slopping of liquid during transportation. My impression is that a compression cover, or a cover with a spring attachment, would answer the purpose.

“For a troop of about sixty-five men four of the compartments would be sufficient, and this, I believe, should form the standard size of the fireless cooker for army use. For a larger organization, as a battery of field artillery, two of these could be used, but in any case two of the roasting compartments should be retained in each cooker. The cooker must be reduced in weight. This can be done by using lighter wood for the boxing, and also lighter material for insulation. In the insulation my impression is that sheet cork of about $1\frac{1}{2}$ inches in thickness would be an ideal one, as it would reduce the weight to a great extent, and the covers of the large boilers should be insulated with the same material. The present cooker weighs 400 pounds with all utensils or 271 pounds without the utensils. The cooker with all the boilers filled with water will weigh 825 pounds. The standard size suggested should weigh about one-third less, or about 538 pounds when charged. In the construction of the standard size with lighter wood and insulation the weight could be reduced very materially, say, approximately, to about 475 pounds when charged.

“As a result of yesterday’s test it proves without question that the fireless cooker can be used to great advantage by troops in the field. With the standard size cooker suggested one escort wagon will carry sufficient food for a battalion. The cook of each organization could prepare the meal for the same and tag the cooker, the cookers collected on the one wagon and move right along with troops.”—*Army and Navy Register*.

Medico=Military Index.

MILITARY MEDICINE.

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Editorial Expression.

THE "OLD GUARD" AT BUFFALO.

THE Buffalo meeting will be the fifteenth annual convention of the Association of Military Surgeons of the United States, and it seems particularly appropriate that it should be made an especial anniversary. There are still connected with the Association a considerable number of its charter members, and many more who joined in its earlier years. These have been very aptly styled the "Old Guard" of the Association, and conspicuous among them is the present President of the Association. It is hoped then that special effort will be made by the "Old Guard" to be present at Buffalo and to enjoy the unstinted hospitality which is sure to be tendered by that delightful city. It is suggested that correspondence upon the question among the older members of the Association would be likely to assist in bringing this about, and it is urged that all of the older members not only arrange to be present themselves, but that they use every possible means to bring others of the old membership to attend also. The promise of a magnificent meeting is brilliant in the extreme and no one can be present without deriving the greatest benefit and pleasure from its sessions.

THE REPORT OF THE JOINT ARMY AND NAVY FIRST AID AND EQUIPMENT BOARD.

MUCH interest attaches to the Report of the Joint Board of Medical Officers of the Army and Navy,* which convened in Washington last February, and whose Report has just been made public. It marks a step in the direction

*The members of the Joint Board were Medical Director John C. Wise, U.S.N., Colonel Valery Havard, U.S.A., Surgeon C. F. Stokes, U.S.N.,—who was relieved by Surgeon J. D. Gatewood, U.S.N.,—Surgeon William C. Braisted, U.S.N., Captain Charles Lynch, U.S.A., and Captain Carl R. Darnall, U.S.A.

of uniformity in the several services, which is in the highest degree desirable. This Report is of so much importance that it is appended herewith in full.

FIRST-AID PACKET.

We believe a good first-aid packet should fulfill the following conditions :

1. It should be simple in construction and should have few separate parts.
2. It should be easy of application, even by the unskilled.
3. It should be so made and so arranged as to require no handling of that part of the dressing which comes in contact with the wound.
4. The compresses should be of sufficient area and thickness to afford effective protection to the wound.
5. The compresses and bandages should be made entirely of absorbent material rendered antiseptic by mercuric chloride.
6. The completed packet should be as small and as light as possible: consistent with effectiveness.
7. It should be provided with a waterproof hermetically-sealed durable covering. It is our opinion that a case made of brass or copper is the best and, on the whole, much more economical than rubber or cloth covers, and insures to a much greater degree the presence of the packet on the person of the soldier when needed.
8. The container should be easily opened and should have an arrangement for secure attachment to the belt of the soldier.

We have carefully considered the subject and have examined many kinds of packets, including those used by the principal foreign governments, and it is our opinion that a first-aid packet should be adopted in the Army and Navy conforming to the following specifications:

SPECIFICATIONS FOR "FIRST-AID PACKET."

1. Two bandages of absorbent sublimated (1:1000) gauze, 4 by 84 inches, with a mesh of at least 38 by 44 threads to the square inch.
2. Two compresses of absorbent sublimated (1:1000) gauze, each composed of one-half square yard of gauze, 28 by 32 threads to the square inch, so folded as to make a compress $3\frac{1}{2}$ by 7 inches.
3. One compress to be placed lengthwise in the center of each bandage and retained in position by sewing along *one* end and *across* the center. The loose end of the compress is then folded on the sewed part and held by one or two stitches, thus making a compress $3\frac{1}{2}$ by $3\frac{1}{2}$ inches.
4. Each bandage thus prepared to be rolled loosely from each end, with the roll toward the back of the bandage, until the compress is reached. The latter is now folded through the center and the flattened rolls of the bandage laid on either side of the folded compress. Each bandage then to be wrapped separately in parchment or waxed paper.
5. Two No. 3 safety pins wrapped in waxed paper.

6. The two compresses and the safety pins are then wrapped together in tough paper on which simple directions for application are printed.

7. The packet thus prepared to be placed in a hermetically-sealed metal case with a suitable arrangement for easy opening, and provided with hooks or loops for attachment to the cartridge belt. All contents of the case must be sterile. Dimensions of the case should not exceed $4\frac{1}{2}$ by $2\frac{1}{2}$ by $1\frac{1}{4}$ inches.

8. The words "First-aid Packet, U. S. Army" (or "Navy") should be stamped on the metal case. Also directions for opening, manufacturer's name and date of contract.

This packet contains 1 square yard of gauze in the two compresses and 14 feet of bandage, enough to make a good, substantial dressing. By breaking the stitch holding the folds of the compress together and spreading it out a wound of considerable extent may be covered. Another advantage of such a packet is that two wounds at different levels may be dressed with the contents of one packet.

This packet is no larger and weighs no more than the present Army packet.

SHELL-WOUND DRESSING.

For large wounds produced by fragments of shell, splinters, etc., the individual first-aid packet as described above may not be large enough to properly cover the wound. Therefore, for use on vessels of war and with coast and siege artillery, a larger dressing should be provided. Such dressings may be made on the ships or at the hospitals or they may be manufactured in advance and issued as required.

For this purpose we recommend the adoption of a dressing conforming to the following specifications:

SPECIFICATIONS FOR "SHELL-WOUND DRESSING."

1. One compress composed of 1 square yard of absorbent sublimated (1:1000) gauze with a mesh of at least 28 by 32 threads to the square inch, so folded as to make a pad 6 by 9 inches. Across the back of each end of this compress is placed a piece of gauze bandage 3 inches wide by 48 inches long projecting beyond the compress 21 inches on each side. These bandages are held in position by stitching along the edges of the compress; the tails are loosely rolled and placed on the back of the compress.

The compress thus made to be wrapped in parchment or waxed paper.

2. One bandage, 3 inches wide by 5 yards long of absorbent sublimated (1:1000) gauze with 38 by 44 threads to the square inch, loosely rolled and wrapped in parchment or waxed paper.

3. Two No. 3 safety pins wrapped in waxed paper.

4. The whole dressing to be wrapped in tough paper with directions for application printed thereon. If it is considered advisable the dressing may be further protected by an envelope of rubber sheeting properly sealed, or other impermeable covering.

The short bandages sewed to the compress are for the purpose of temporarily fixing the compress on the wound, after which it is firmly bound on by the roller bandage.

A bag or small box of these dressings should be issued to each dressing station on board ship or to each seacoast battery before an action, and the officers and enlisted men should be instructed in the method of their application.

TRANSPORTATION OF WOUNDED.

1. *Litters*.—We believe that the litter now used in the Army is also well adapted for the use of the Navy when serving on shore. It is recommended, however, that it be furnished with a body strap of webbing for securing the patient on the litter. This should be of sufficient length to go around litter and patient and should pass through loops on the sides of the litter poles or through a single loop sewed on the back of the litter canvas. It is also recommended that a light hinged frame of metal or wood be added for supporting a light canvas or waterproof cover for the litter. A certain number of these folded frames should be carried in each ambulance for use when needed.

(a) It is recommended that the "Stokes splint stretcher" be adopted for use by the Navy and also by the Army for use on transports, hospital ships, and batteries at seacoast artillery stations.

(b) It is recommended that experiments be instituted with a view to the development of a practical wheeled litter for use in the Army—preferably an attachment to be used with the present litter. In modern warfare patients usually have to be transported long distances by hand and the work is very slow and exhausting if the whole weight of the patient is borne by the bearers. Such litters may also be used to great advantage in the vicinity of field, stationary, and base hospitals. Wheeled litters are of course not necessary in the Navy, except under special conditions on shore, but may be of great service in the Army.

2. *Travois*.—The travois, being the simplest, the least bulky, and most transportable of all means for carrying the sick and injured long distances in the absence of wheeled vehicles, is strongly recommended for both services.

3. *Pack-mule transportation*.—We regard pack transport as indispensable for the service of the advanced dressing stations in the field, considering as we do wheeled vehicles useless for the purpose during an action. We strongly recommend that the "Pulman pack outfit," approved by the War Department July 19, 1905, be adopted for use by the Medical Department of the Army, with such modifications as actual experience may show to be desirable.

4. *Ambulance wagons*.—We have carefully examined and also witnessed a demonstration of the use of an English invention called the "rapid transit galloping ambulance" and were very favorably impressed with it.

This ambulance is a very light two-wheeled vehicle with shafts; it is provided with springs and is very comfortable. The patient rests in the ambulance on a litter and can be securely strapped in. It has a substantial top provided with curtains and a hood, thus protecting the patient from rain, wind, and sun. Any cavalry horse broken to pull by breast collar can be used to draw it, and it is used with the ordinary cavalry saddle, the driver riding the horse. One man can manage it and load or unload the patient. The tread is narrow, thus permitting its use in rough and bushy country, and having only two wheels it can be turned about easily. It can also be used as a rapid and easy means of taking dressings and supplies near to the dressing stations. It is especially suitable for use with cavalry and field artillery. It cannot take the place of the present army ambulance, but if adopted will be a valuable addition to our means of transporting the sick and wounded.

We therefore recommend that it be adopted for the use of the Army and also for the Navy when necessary.

As this ambulance is of foreign manufacture, we further recommend that if it be adopted arrangements be made for its construction in this country.

EQUIPMENT OF THE HOSPITAL CORPS.

We believe that the orderly pouch and the Hospital Corps pouch of the Army are also the most suitable for the Navy.

1. *Orderly pouch*.—We recommend that the following changes be made in the contents of the orderly pouch:

(a) As it is often very difficult in the field to obtain water and make solutions for hypodermatic use, there should be added to this pouch a tin case with a screw top as a container for three (3) 20 cubic centimeter vials for holding prepared solutions of morphine sulphate, strychnine sulphate, and nitroglycerine. The mouths of the vials should be of sufficient width to admit the barrel of a hypodermic syringe and should be fitted with ground-glass stoppers. The solutions should be freshly made with distilled or boiled water and the ordinary hypodermic tablets only a few days, at most, before use.

(b) That it contain a candle, folding lantern, or other means of making light.

(c) That the cup on the ammonia bottle be graduated inside obliquely across one of the lower corners for one-half teaspoonful, one teaspoonful, and one tablespoonful.

(d) That eight (8) meter packets of gauze be carried instead of four (4).

(e) That four (4) first-aid packets be carried in the pouch instead of eight (8).

(f) That fifty (50) diagnosis tags be carried instead of twenty-five (25).

(g) It is believed that the amount of ligature material is excessive and should be reduced to three (3) envelopes each of silk and catgut.

2. *Hospital Corps pouch*.—We recommend that the following changes be made in the Hospital Corps pouch:

(a) That the cup on the ammonia bottle be graduated as recommended for the orderly pouch.

(b) That the first-aid packets be reduced to four (4).

(c) That four (4) meter packets of gauze be added.

(d) That the rubber bandage be replaced by a simple field tourniquet of webbing. This recommendation is made because we believe the webbing tourniquet is less dangerous in the hands of the average hospital corps man than the rubber constrictor.

GENERAL EQUIPMENT.

We recommend that the general equipment, including tentage, cooking and mess outfits, and bedding, be the same for the Navy while in active service on land as that used in the Army under similar conditions.

MEDICINES.

We recommend that the same alphabetical arrangement of the official Latin names of the medicines on the supply tables of the two services be followed as far as practicable.

DIAGNOSIS TAGS.

We recommend that a diagnosis tag conforming to the following specifications be adopted for the Army and, with the necessary changes, for the Navy also.


Size $2\frac{1}{2}$ by $5\frac{1}{2}$ inches, provided with a copper wire four (4) inches long for fastening to the clothing.

Material to be linen, faced with paper.

All inks and colors used to be "*fast*."

Twenty-five (25) or fifty (50) to be bound in a book with pasteboard covers.

Form to be as follows:

	Date and hour.....	(Blue.)	(White.)
	Name and rank.....		
	Regiment or department.....		
	Diagnosis.....		
		
	Treatment.....		
	Ambulance station.....		
	Field Hospital.....		
Signature.....			

The following directions should be printed on the inside of the cover.

1. In any wound or disease not rendering the patient unable to walk, detach the white body of the tag, leaving the colored border attached to the stub. In a wound or disease rendering the patient unable to walk, detach the entire tag, including colored border.

It will thus be always possible to ascertain by the number of colored borders left with the stubs how many of the patients treated were or were not able to walk.

2. Under "Diagnosis" note all essential facts, character of injury, parts involved, fracture, etc.

3. Under "Ambulance Station" and "Field Hospital" note any additional treatment applied. If at either place it is deemed best not to evacuate a desperately sick or wounded patient any further, write the words "not transportable," or the initials "N. T."

4. Under "Remarks" on the back may be noted any important fact for which there is no room on the face, whether operation or treatment is urgently needed, the amount of stimulant or anodynes already administered, etc.

5. Fasten to button on clothing of patient over sternum or as near it as possible.

BRASSARD.

We recommend that the brassard be made larger, that its dimensions be specified, and that it be the same for the two services, namely, three (3) inches broad and with the cross three (3) inches in height and width, and with arms one (1) inch broad.

HOSPITAL SHIPS.

The special need of a hospital ship, designed and built for this purpose only, for each branch of the service is appreciated. It is evident that a perfectly satisfactory ship for hospital purposes can be obtained only in this way. It is therefore recommended that plans and specifications for such a ship be submitted for consideration, looking to the building of such a vessel for the Army and one for the Navy. These perfected ships will always be type ships, will allow for the practical study of such ships, with a view to further improvements, and they will fill a need felt for a long time during peace and be the basis for these structures in time of war.

The following points are agreed upon as the desirable features to be obtained in selecting and equipping a hospital ship, taken from the merchant marine:

Hull: Of iron or steel.

Size: Not less than 4,000 tons.

Compartments: At least four good water-tight compartments.

Bilge keels.

Length: Not less than 350 feet.

Beam: Not less than 40 feet.

Steaming radius 5,000 miles.

Free board: There should be as much free board as possible consistent with steadiness and safety.

Decks: At least four good unincumbered decks.

1. Superstructure decks.
2. Upper deck.
3. Main deck.
4. Lower deck.
5. Hold.

Disposition of space.

Upper deck.--Navigating officers with offices, staterooms, and mess rooms, forward; senior medical officer's adjoining captain's.

Aft: Infectious ward; movable, mosquito proof, double canvas top; closets and wash rooms with separate plumbing; utensil closet, nurses' room, and medical attendants' room.

Extreme aft: Disinfector for infected material.

Boats: At least two steam launches specially equipped for transport of sick.

Junior medical officers have staterooms near sick officers' quarters, and medical officers' mess in the wardroom of sick officers.

Upper deck, forward.--Ward for sick officers: At least 2 suits of communicating rooms for officers of high rank, with bath and closet in one and standing bed, stationary eating table, and clothes locker in the other.

Other rooms: At least 10 single rooms for officers of commissioned rank, except cadets. There should also be a mess room with mess table sideboard, library, easy chairs, pantry, and dumb-waiter. At the after end there should be common closets, baths, and wash room.

Aft: Medical ward, with standard bunks single or double banked, according to plan, with eating board, spit cups, and ditty box attached. Head nurse's room. In rear of ward: Baths, closets, wash room, and examining room. Starboard side engine room uptakes: Dispensary with Navy standard fittings complete, and adjoining stateroom for pharmacist.

Port side:

1. Lounging and smoking room for officers.
2. Commissary's office.
3. Medical records and business office.

Main deck, forward.--Medical convalescent ward arranged the same as the medical ward.

Aft: Surgical ward, with operating room, x-ray and electro-therapeutic room, and small dark and developing room on starboard side forward; recovery room adjoining. Aft, on port side of ward, pus operating room, and dressing room, baths, closets, and wash room; on starboard side, head nurse's room, clinical bacteriological room and dentist's office, outfit complete, Navy or Army standard, with working library. Portside uptakes: Mess rooms for convalescents, with pantries and warming room. On starboard

uptakes, galleys, bakeshops, etc. Adjoining convalescent ward, forward, ward for noncommissioned officers, with adjoining mess room and pantries; closets and baths on port side connecting with same for convalescent medical ward. Aft of galleys: Mess room for nurses, hospital stewards, etc. Pharmacist to mess with warrant officers.

Lower deck, forward extreme.—Petty officers' mess room, quarters, bath, closets; corresponding space on main deck above for crew.

Mid deck space.—Steam laundry, port side forward. Ice machines (two), capacity 3-4 tons, starboard side. Disinfector, drying room, freight elevator, cargo ports, cells for prisoners, and padded cells for insane. Dynamo room.

Aft: Crew space, with mess tables, Navy standard lockers, library, and master-at-arms office and stateroom. Further aft, nurses, with mess tables, lockers, Navy standard pattern, books of instruction, lecture room, berths. Closets with wash rooms extreme aft.

Hold, forward.—Storerooms for vegetables and meats, pantries for officers' mess, storeroom for perishable goods, and dead room, with Navy standard outfit.

Aft: Engineer stores, paymaster stores, medical stores for use on board ship and for distribution.

Extreme aft: Two Army regimental hospitals each for 1,000 men, with wheeled litters, for use with landing parties.

Means of transportation for sick and wounded:

1. Wheeled carriage.
2. Stretchers, Stokes' and Army.
3. Cargo ports.
4. Electric "Otis" light-running elevator at site of after cargo ports, running to all decks.
5. Davits and whip.
6. Steam launches.
7. Ladders.

The entire ship should be screened.

Medical and Hospital Corps personnel for a ship of 200 beds.—Medical: One medical officer in command of ship; four medical officers to attend the patients.

Hospital Corps:

Noncommissioned officers: Five (5).

Privates: Thirty-five (35).

Crews of ships:

It is recommended that the crews of hospital ships be composed entirely of civilians.

This report has been endorsed by the Army General Staff, approved by the Secretary of War, and promulgated in General Orders.

News of the Services.

Lieutenant John H. Allen, U.S.A., ordered from Fort Sill to San Francisco for temporary duty.

Passed Assistant Surgeon J. W. Amesse, P.H.&M.H.S., relieved from special temporary duty at New Orleans, and ordered to return to Ellis Island.

Surgeon P. H. Bailhache, P.H. & M.H.S., appointed delegate to the American Medical Association meeting at Boston.

Captain David Baker, U.S.A., ordered for temporary duty at San Francisco.

Lieutenant Colonel John M. Banister, U.S.A., ordered from Fort Riley to the Washington General Hospital for observation and treatment.

Assistant Surgeon J. L. Belknap, U.S.N., ordered from the *Brooklyn* to the *Kentucky*.

Surgeon W. J. Blackwood, U.S.N., ordered from the Newport Naval Torpedo Station to the *New Jersey*.

Passed Assistant Surgeon Rupert Blue, P.H.&M.H.S. relieved from duty at Reedy Island Quarantine, Norfolk, Va. and the Hygienic Laboratory in Washington, and ordered to San Francisco for special temporary duty, returning to Washington upon its completion.

Passed Assistant Surgeon F. M. Bogan, U.S.N., ordered to the *Marietta*.

Captain Robert C. Bourland, Ill.N.G., promoted from First Lieutenant.

Lieutenant P. L. Boyer, U.S.A., ordered from Fort Sam Houston to San Francisco, Cal., with Squadron of the 1st Cavalry for temporary duty.

Lieutenant Roger Brooke, Jr., ordered for temporary duty at San Francisco.

Assistant Surgeon F. H. Brooks, U.S.N., ordered to the *Columbia*.

Surgeon S. D. Brooks, P.H. & M.H.S., ordered to San Diego, Cal.

Passed Assistant Surgeon E. M. Brown, U.S.N., ordered to the New York Naval Hospital.

Dr. Wilmont E. Brown, U.S.A., ordered from Boise Barracks to Fort Walla Walla, and from Fort Walla Walla to Fort Stevens for temporary duty.

Major George E. Bushnell, U.S.A., appointed delegate to the National Association for the Study and Prevention of Tuberculosis.

Dr. Caspar R. Byars, U.S.A., ordered from Fort Sam Houston to Jefferson Barracks.

Brigadier General John Campbell, who was retired while Colonel and Surgeon U.S. Army in 1886, died at Cold Spring, N. Y., December 25, 1905, aged eighty-four.

Dr. William E. Cass, U.S.A., ordered from Vancouver Barracks to San Francisco with the 14th Infantry.

Captain W. C. Chidester, U.S.A., leave of absence extended to June 5, 1906.

Assistant Surgeon H. W. Cole, Jr., U.S.N., ordered from the *Maine* to the *Alabama*.

Lieutenant C. H. Connor, U.S.A., reported* for temporary duty at the Presidio General Hospital.

Surgeon F. J. B. Cordeiro, U.S.N., discharged from treatment at the New York Naval Hospital, ordered for physical examination, and thence home to await orders.

Lieutenant William T. Davis, U.S.A., ordered with Co. A, Hospital Corps, for duty at San Francisco.

Assistant Surgeon F. W. S. Dean, U.S.N., ordered to the Denver Naval Recruiting Station.

Assistant Surgeon P. T. Dessez, U.S.N., ordered from the *Charleston* to the *Severn*.

Captain John R. Devereux, U.S.A., ordered from Fort Logan to San Francisco for temporary duty.

Assistant Surgeon B. H. Dorsey, U.S.N., ordered to the *Lancaster*.

Captain B. H. Dutcher, U.S.A., ordered for temporary duty at the Washington General Hospital.

Assistant Surgeon J. R. Dykes, U.S.N., ordered to the New York Navy Yard.

Passed Assistant Surgeon B. H. Earle, P.H. & M.H.S., ordered to Washington for sanitary inspection of certain public buildings.

Assistant Surgeon H. G. Ebert, P.H. & M.H.S., ordered from Seattle to San Francisco for special temporary duty.

Captain James F. Edwards, late Assistant Surgeon U.S.A., has been appointed Superintendent of the Bureau of Health of Pittsburg. The Smoky City is to be congratulated upon securing the services of a military medical officer for this position, and the precedent thus established is one which may well be followed by other municipalities.

Dr. William J. Enders, U.S.A., returned to Fort Morgan from leave.

Surgeon S. G. Evans, U.S.N., ordered from the Denver Naval Recruiting Station to the *Louisiana*.

Assistant Surgeon E. O. J. Eytinge, U.S.N., ordered to the *Elcano*.

Dr. Robert L. Felts, U.S.A., granted two months' leave.

Captain Charles E. B. Flagg, U.S.A., on temporary duty with the 14th Infantry at San Francisco, and ordered before the Presidio Promotion Board for examination.

Assistant Surgeon A. D. Foster, P.H.&M.H.S., granted one month's sick leave.

Assistant Surgeon W. H. Frost, P.H.&M.H.S., ordered from Ellis Island to Baltimore.

Captain Leigh A. Fuller, U.S.A., ordered for temporary duty at San Francisco.

Major Charles M. Gandy is the subject of an interesting article in the Detroit papers which speak very highly of his work at Fort Wayne and express much regret at his change of station from Fort Wayne to West Point.

Lieutenant Nelson Gapen, U.S.A., ordered for temporary duty at San Francisco.

Dr. Fletcher Gardner, U.S.A., arrived at Fort H. G. Wright from Fort Michie for temporary duty.

Captain Edward F. Geddings, U.S.A., ordered for temporary duty at San Francisco.

Captain Harry L. Gilchrist, U.S.A., ordered with Co. A. Hospital Corps, for duty at San Francisco.

Assistant Surgeon David W. Graham, commissioned Surgeon in the Illinois Naval Reserve.

Dr. Hubert Grieger, U.S.A., on leave of absence from the Philippine Division.

Assistant Surgeon C. C. Grieve, U.S.N., ordered home from the *Wilmington*.

Dr. W. Church Griswold, U.S.A., returned to Fort Dupont from leave.

Assistant Surgeon J. P. Haines, U.S.N., appointed with rank of Lieutenant (j.g.), April 16, 1906.

Major H. M. Hallock, U.S.A., granted one month's extension of sick leave.

Captain Frederick M. Hartsock, U.S.A., ordered for temporary duty at San Francisco.

Lieutenant L. M. Hathaway, U.S.A., ordered from Fort Thomas to St. Louis to accompany medical supplies to and for temporary duty at San Francisco.

Assistant Surgeon G. S. Hathaway, U.S.N., ordered from the *Constellation* to the *New Jersey*.

Dr. Melville A. Hays, U.S.A., returned from temporary duty at Fort Wright to Vancouver Barracks, and arrived at Fort Casey for temporary duty.

Dr. John R. Hereford, U.S.A., arrived at Fort Moultrie from Fort Caswell for temporary duty.

Dr. David D. Hogan, U.S.A., on leave of absence from the Philippines Division, and ordered to temporary duty at San Francisco.

Passed Assistant Surgeon R. E. Hoyt, U.S.N., ordered from the Naval Academy to the *Newark*.

Surgeon M. K. Johnson, U.S.N., ordered from the *Maine* to the *Iowa*.

Major Charles F. Kieffer, U.S.A., on temporary duty at San Francisco with the 11th Infantry from Fort D. A. Russell.

Passed Assistant Surgeon W. W. King, P.H. & M.H.S., ordered from Washington, D.C., to Fort Missoula, Mont., for special temporary duty and return.

Dr. Fred T. Koyle, U.S.A., returned to Fort Bliss from leave, and ordered to Fort McDowell, Cal.

Dr. Charles F. Kuhn, U.S.A., ordered from Fort William H. Seward to Fort Sam Houston, and from Fort Lawton to San Francisco with the 10th Infantry.

Surgeon Cary D. Langhorne, U.S.N., ordered to the Naval Medical School.

Captain William F. Lewis, U.S.A., ordered to take temporary charge of the Chief Surgeon's Office, Department of the Lakes.

Major William F. Lippitt, U.S.A., has resigned from the service and will engage in private practice in Porto Rico.

Dr. Stephen M. Long, U.S.A., ordered to the Philippines via the *Sheridan*.

Surgeon C. H. T. Lowndes, U.S.N., ordered from the *Texas* to the *Virginia*.

Passed Assistant Surgeon L. L. Lumsdem, P.H. & M.H.S., granted two months leave.

Major Charles Lynch, U.S.A., reappointed to the General Staff.

Dr. Donald P. McCord, U.S.A., returned to Fort Rodman from leave.

Passed Assistant Surgeon G. W. McCoy, P.H. & M.H.S., ordered from the Philippine Islands to San Francisco.

Assistant Surgeon A. D. McLean, U.S.N., ordered from the *Alabama* home to await orders.

Dr. Clemens W. McMillan, U.S.A., arrived at Fort Crook.

Passed Assistant Surgeon H. S. Mathewson, P.H. & M.H.S., granted two months leave.

Surgeon F. W. Mead, P.H. & M.H.S., ordered to Washington for sanitary inspection of certain public buildings.

Assistant Surgeon J. B. Mears, U.S.N., ordered to the *Minneapolis*.

Lieutenant William H. Moncrief, U.S.A., ordered for temporary duty at San Francisco.

Surgeon L. Morris, U.S.N., ordered from the *Iowa* home to await orders, and thence to the Newport Naval Torpedo Station and to additional duty in attendance upon Naval and Marine officers not otherwise provided at that Station with medical aid.

Assistant Surgeon H. T. Nelson, U.S.N., resigned April 14, 1906.

Dr. Ralph W. Newton, U.S.A., ordered to the Yosemite National Park.

Lieutenant R. E. Noble, U.S.A., ordered from Fort Casey to temporary duty at San Francisco and in the office of the Medical Supply Officer.

Passed Assistant Surgeon J. H. Oakley, P.H. & M.H.S., ordered from Port Townsend, Wash., to San Francisco for special temporary duty.

Assistant Surgeon E. H. H. Old, U.S.N., ordered from the Naval Medical School to the San Francisco Naval Training Station, and thence to the Canacao (P. I.) Naval Hospital.

Assistant Surgeon G. M. Olsen, U.S.N., ordered to the *Wisconsin*.

Captain Henry Page, U.S.A., reported for temporary duty at the Presidio General Hospital.

Assistant Surgeon T. N. Pease, U.S.N., ordered from the *Columbia* home to await orders.

Lieutenant Colonel Harry O. Perley, U.S.A., granted two months leave.

Dr. Joseph Pinquard, U.S.A., ordered to accompany troops from Fort Mackenzie to Fort D. A. Russell.

Dr. Elias H. Porter, U.S.A., on leave of absence from the Philippine Division, ordered to temporary duty at the Presidio of San Francisco, and to the Yosemite National Park.

Lieutenant William A. Powell, U.S.A., ordered from Jefferson Barracks to accompany supplies to and for temporary duty at San Francisco.

Assistant Surgeon J. A. Randall, U.S.N., ordered from the *Kentucky* home to await orders.

Assistant Surgeon E. U. Reed, U.S.N., ordered to the *Charleston*.

Assistant Surgeon I. S. K. Reeves, U.S.N., ordered from the *Minneapolis* home to await orders.

Assistant Surgeon W. H. Rennie, U.S.N., ordered home from the *Elcano*.

Sergeant, First Class, David Robertson, U.S.A., is the subject of a favorable report from the Senate Military Committee upon a bill to place him upon the retired list of the Army with commissioned rank.

Assistant Surgeon H. McG. Robertson, P.H. & M.H.S., granted two months leave.

Assistant Surgeon W. C. Rucker, P.H. & M.H.S., ordered from special temporary duty at New Orleans to rejoin at Vineyard Haven.

Captain E. L. Ruffner, U.S.A., granted three months leave.

Lieutenant George H. Scott, U.S.A., ordered for temporary duty at San Francisco.

Assistant Surgeon W. F. Schaller, U.S.N., ordered to the Mare Island Naval Hospital.

Assistant Surgeon F. E. Sellers, U.S.N., ordered to the *Ohio*.

Assistant Surgeon F. C. Smith, P.H. & M.H.S., ordered from special temporary duty at New Orleans to rejoin at Detroit.

Dr. Samuel A. Springwater, U.S.A., arrived at San Francisco from the Philippines, and ordered to temporary sanitary duty at San Francisco.

Assistant Surgeon P. R. Stalnaker, U.S.N., ordered to the *West Virginia*.

Captain Samuel C. Stanton, Ill.N.G., appointed Contract Surgeon U.S.A., and assigned to duty as assistant to the Attending Surgeon, Headquarters Department of the Lakes.

Acting Assistant Surgeon W. G. Steadman, Jr., U.S.N., appointed April 27, 1906.

Medical Inspector J. M. Steele, U.S.N., ordered from the *Brooklyn* home to wait orders.

Assistant Surgeon E. M. Šteger, P.H. & M.H.S., granted two months leave.

Lieutenant William J. Swift, commissioned Assistant Surgeon Ill.N.G., and assigned to the 7th Infantry.

Dr. William H. Tukey, U.S.A., returned to Boise Barracks from leave.

Dr. George B. Tuttle, U.S.A., arrived at San Francisco from the Philippines, and ordered to temporary duty at the Presidio of San Francisco.

Acting Assistant Surgeon J. Tuttle, P.H. & M.H.S., granted one month's leave.

Assistant Surgeon W. W. Verner, U.S.N., ordered home from the *Wisconsin*.

Captain Walter D. Webb, U.S.A., ordered for temporary duty at San Francisco.

Dr. Clark I. Wertenbaker, U.S.A., left Madison Barracks on leave.

Assistant Surgeon E. W. White, U.S.N., ordered to the *Virginia*.

Assistant Surgeon G. L. Wickes, U.S.N., ordered from the *Ohio* to the *Wilmington*.

Passed Assistant Surgeon R. B. Williams, U.S.N., ordered from the *West Virginia* to the *Maine*.

Dr. Adrian D. Williams, late Contract Surgeon U.S.A., died at his home in Brooklyn, N. Y., on May 4, at the age of thirty.

Lieutenant Compton Wilson, U.S.A., ordered for temporary duty at San Francisco.

Lieutenant Frank T. Woodbury, U.S.A., on temporary duty at San Francisco pending return to the Philippines.

Assistant Surgeon E. L. Woods, U.S.N., ordered to the Naval Academy.

Passed Assistant Surgeon G. B. Young, P.H. & M.H.S., ordered to Saginaw and Bay City, Mich., for special temporary duty, and designated to represent the service at the Council on Medical Education of the American Medical Association.

ILLINOIS NATIONAL GUARD.—An Examining Board, consisting of Lieutenant Colonel George Paul Marquis, Major Charles Adams, Captain Samuel C. Stanton and Lieutenant Truman W. Brophy, met on the 5th ult. at Rush Medical College and examined two candidates for commission and one for promotion.

NEW YORK NATIONAL GUARD FIELD HOSPITAL.—An act has recently been signed by the Governor of New York providing for a field hospital organization to be attached to the state headquarters, the personnel to consist of one Major, three Captains, six Hospital Sergeants, eight Corporals, thirty privates, one musician and one cook.

REMINISCENCES OF THE REBELLION. —The Twenty-Seventh Volume of the Transactions of the College of Physicians of Philadelphia contains three interesting papers, comprising personal recollections of medical and surgical work in the War of the Rebellion by Dr. S. Weir Mitchell, Dr. W. W. Keen and Colonel John S. Billings, which form a valuable contribution to the history of the War.

PRECEDENCE OF ARMY MEDICAL OFFICERS.—The question of precedence among medical officers has recently been raised again at Fort McKinley, where are stationed the following officers, whose rank in the Medical Department is by date of commission, Captain William M. Roberts, First Lieutenant Herbert G. Shaw, Captain Ralph S. Porter, although their precedence in the Army at large, by rank, is Captain Porter, Captain Roberts, Lieutenant Shaw. The question was as to which of these three officers would be entitled to recognition as post surgeon in the absence of a senior medical officer, and which would take precedence in case they should be detailed on the same court or board. It is now held that Captain Roberts would be entitled to recognition as surgeon of the post, but that Captain Porter would take precedence upon a court or board outside of the Medical Department.

SANITATION AND MEDICAL INSTRUCTION IN THE NAVY.—The Navy Department has issued the following General Order (No. 16, March 1, 1906) relating to the Medical Department of the Navy and placing its work upon a thoroughly satisfactory basis:—

It is hereby ordered in accordance with the provisions of section 1547 United States Revised Statutes, that the following alterations be adopted in the Regulations for the Government of the Navy promulgated on June 30, 1905, namely:

Article 11, paragraphs (1) and (2) are amended so as to read as follows:

(1) The Bureau of Medicine and Surgery shall have control of all the hospitals and of the force employed therein; it shall have advisory power with respect to all questions connected with hygiene, and sanitation affecting the service, and, to this end, opportunity for unobstructed inspection; it shall provide for all physical examinations; it shall pass upon the competency, from a professional standpoint of all men in the Hospital Corps for enlistment and promotion by means of examinations conducted under its supervision, or under forms prescribed by it; and it shall have information as to the assignment and duties of all enlisted men of the Hospital Corps, with opportunity to invite the attention of the Department to any changes which may seem to be desirable.

(2) The duties of the Bureau of Medicine and Surgery shall comprise all that relates to medical supply depots, medical laboratories, naval hospitals, dispensaries, and technical schools for the medical and hospital corps. It shall require for all supplies, medicines and instruments used in the Medical Department of the Navy.

The following five articles are adopted and promulgated to follow Articles 1168 and form part of Chapter xxi, entitled "Medical Instructions," Section 3, entitled "General Instructions."

1168a. The Medical Department is charged with the duty of inspecting the sanitary condition of the Navy and making recommendations in reference thereto; of advising with the Department and other Bureaus in reference to the sanitary features of ships under construction and in commission, regarding berthing, ventilation, location of quarters for the care and treatment of the sick and injured; of the provisions for the care of wounded in battle; and in the case of shore stations, in advising in regard to health conditions depending on location, the hygienic construction and care of public buildings, especially of barracks and other habitations, such as camps. So far as practicable, it shall have supervisory control of water supplies used for drinking, cooking, and bathing purposes, and drainage and the disposal of wastes. It shall provide for the care of the sick and wounded, the physical examination of officers and enlisted men, the management and control of naval hospitals, the instruction of the hospital corps, and the furnishing of all medical and hospital supplies. It shall advise in matters pertaining to clothing and food, so far as these affect the health of the Navy.

1168b. The senior medical officer attached to shore stations, under the direction of the commanding officer, will supervise the hygiene of the station and recommend such measures as he may deem necessary to prevent or diminish disease. He will examine monthly and note in the medical journal the sanitary condition of all public buildings, the drainage, the sewerage, the amount and quality of the water supply, the clothing and habits of the men, the character and cooking of the food, and report in writing the conditions to the commandant of the station, together with such recommendations as he may deem proper. The commanding officer will endorse his views and action thereon, and, if he deem the action recommended by the surgeon undesirable, will state fully his objections thereto. He will then return the report, with his endorsements, to the surgeon, and simultaneously forward a copy thereof, through official channels to the Bureau of Medicine and Surgery. The surgeon will immediately enter the endorsements of the commanding officer in the medical journal, and forward, through official channels, to the Bureau of Medicine and Surgery, such further report, if any, as he may deem necessary or advisable in the premises. A special sanitary report shall be made at any time when an emergency arises, and at once be forwarded, through official channels, to the Bureau of Medicine and Surgery.

1168c. Any technical schools which are or may be, established for the education of medical officers and the hospital corps, shall be under the supervision of the Bureau of Medicine and Surgery.

1168d. In the Hospital Corps all first enlistments, including transfers to service, shall be made upon the recommendation of the Bureau of Medicine and Surgery, and all discharges from the corps, except upon expiration of term of enlistment or by sentence of court martial, and all details for duty, shall be made by the Bureau of Navigation, after reference to the Bureau of Medicine and Surgery for comment or recommendation.

1168e. Records of enlistment in the Hospital Corps, and all other papers relating thereto, will be referred by the Bureau of Navigation to the Bureau of Medicine and Surgery for information and to afford an opportunity for recommendation; and an examination report on a form prepared by the Bureau of Medicine and Surgery and approved by the Bureau of Navigation will be recorded in each Bureau in every case of enlistment or promotion.

All regulations or parts of regulations now in force inconsistent with the terms of this General Order are hereby superseded to the extent of such inconsistency.

TOTAL LOSS OF THE JAPANESE ARMY AND NAVAL MEDICAL STAFFS DURING THE LATE WAR.—From the beginning of the late Russo-Japanese War to the conclusion of the treaty of peace, says the *Sei-I-Kwai Medical Journal*, the Japanese Army and Navy lost twenty-nine surgeons killed in battles and forty-one surgeons dead by disease, making up seventy in all. The details will be shown in the following tables:

Army Surgeons.	Surgeon-Major.	Surgeon-Captain.	Surgeon-Lieutenant.	Second Lieutenant.	Total.
Killed	1	3	6	9	19
Dead	2	7	7	21	37
Total	3	10	13	30	56

Compared with the loss of Army Medical Staff during the Chino-Japanese War in the year 1894 and 1895, the casualties of the late Russo-Japanese War are greater, because no surgeon was killed and only 27 surgeons died in the former war. From this we can easily understand how the late war was fought furiously between the Japanese and Russians.

Navy Surgeons.	Fleet Surgeon.	Staff Surgeon.	Surgeon.	Assistant Surgeon.	Total.
Killed.	2	1	4	3	10
Dead.			3	1	4
Total.	2	1	7	4	14

During the Chino-Japanese War only two surgeons were killed on board the warships and not one from sickness. Therefore, the loss of the naval medical staff in the late war is also greater than that during the Chino-Japanese War.

Current Literature.

THE BARTON FIRST AID TEXT-BOOK.*

IT is interesting to learn that the work of the National First Aid Association of America has developed so rapidly that the first edition of its especial text-book has been exhausted and the issue of a second edition, much improved and enlarged, has been possible. The new work shows many valuable features, which render it still more adapted to the use of primary first aid classes even than the first edition. Both Captain Hartung, the author of the book, and the Association are to be congratulated upon this valuable adjunct to first aid work.

MODERN CLINICAL MEDICINE.†

THE second volume of *Modern Clinical Medicine*, edited by Julius L. Salinger, M.D., takes up the subjects of diseases of metabolism and of the blood, animal parasites and toxicology, and is under the especial editorship of Dr. Richard C. Cabot of Harvard University. The "Deutsche Klinik," from which it is a translation, is a recognized standard in the German, and is characterized by the thoroughness and completeness which experience has led the profession to expect from our Teutonic brethren. Among the authors of the articles in the present volume may be mentioned Ebstein, Ewald, His, Ehrlich, Leube and others.

***The Barton First Aid Text-Book.** Second Edition, revised and enlarged. By H. H. HARTUNG, M.D. Arranged and illustrated by ROSCOE G. WELLS. 12mo; pp. 134, with 53 illustrations. Boston, The National First Aid Association of America, 1906.

†**Diseases of Metabolism and of the Blood, Animal Parasites and Toxicology.** Edited by RICHARD C. CABOT, M.D. Vol. II of *Modern Clinical Medicine*. Edited by JULIUS L. SALINGER, M.D. 8vo; pp. 649. New York, D. Appleton & Co., 1906.

NURSING IN THE ACUTE INFECTIOUS FEVERS.*

THIS valuable little book has been prepared evidently for the nurse. The author takes up first general considerations and follows with the special diseases,—typhoid, small-pox, scarlet fever, measles, pneumonia, etc., and closes with a third part treating of antitoxins, bacteria, uranalysis, etc., the whole combining to form an exceedingly interesting and valuable manual.

THE OPERATING ROOM AND THE PATIENT.†

THIS little book should be in the hand of every graduate in medicine, by whom it will be found of the highest interest and value, containing, as it does, information which appears in no textbook, and which hitherto has been available only in the wards and operating rooms of the larger hospitals. Dr. Fowler describes in detail the material of all kinds needed for surgical operations in general and also in particular, based upon a long experience in the best hospitals in association with his father, the late General Fowler of Brooklyn, and other surgeons of the highest repute.

MAJOR SEAMAN'S REAL TRIUMPH OF JAPAN.‡

IN a very handsome book Major Seaman presents in full his views of the sanitary work of the Japanese Army. As the *Archives de Medecine Navale* remarks, Major Seaman is a well known "Japonophile," and the present work presents a full statement of the reasons for his opinions. The readers of this JOURNAL will recognize the book, both in title and in text, as an expansion, with many interesting and valuable additions,

*Nursing in the Acute Infectious Fevers. By GEORGE P. PAUL, M.D., 12mo; pp. 200, illustrated. Philadelphia and London, W. B. Saunders Co., 1906.

†The Operating Room and the Patient. By RUSSELL S. FOWLER, M.D. 8vo; pp. 172, illustrated. Philadelphia and London, W. B. Saunders Co., 1906.

‡The Real Triumph of Japan—The Conquest of the Silent Foe. By LOUIS LIVINGSTON SEAMAN, M.D., L.L.B. 12mo; pp. 291, with 31 full page plates. New York, D. Appleton & Co., 1906.

of the paper which its distinguished author read before our Association in Detroit last fall, and no better resumé of its contents could be given than the paper in question. Numerous illustrations of particular interest and value are included in the book, and many chapters, giving in much detail accounts of the Major's observations in Japan and Manchuria, greatly increase the interest of the work. No one can read it without being still more deeply impressed by the high grade of military sanitation in Japan.

NAVAL SANITARY STATISTICS OF ITALY.*

IN pursuance of a policy adopted some years since for international military medical statistics, the Italian *Ministero della Marina* has published the official sanitary statistics for the year 1899-1900, for a copy of which we are indebted to Major General S. Grisolia, the Chief Medical Officer of the Navy. The work is characterized by the completeness and fullness which we have learned to expect from the work of our Italian brethren and forms a valuable contribution to military medical statistics.

SURGICAL MALINGERING.†

MALINGERING has been a common subject of consideration in military medical circles for many centuries and there are no doubt upon the pension rolls of our government hundreds of cases of pensions which owe their origin to malingering. The subject, however, has not attained the importance in the Army that it has in connection with railway medical service, as is clearly shown in the interesting work of Dr. King upon this subject. Couched in the delightful verbiage, for which the author is so well known, the book is not only an interesting production for the reader, but is of genuine value in its field.

**Statistica Sanitaria dell' Armata per gli anni 1899 e 1900.* 4to; pp. 271, with numerous tables. Roma, Ministero della Marina, 1906.

†*Perjury for Pay. An Exposé of the Methods and Criminal Cunning of the Modern Malingerer.* By WILLIS P. KING, M.D. 8vo; pp. 312. Kansas City, The Burton Co., 1906.

FRÜHWALD'S PEDIATRICS.*

THIS excellent work has achieved great vogue in Germany and is now available to English readers with the addition of the editorial work of Dr. Westcott of Philadelphia, who has fully adapted it to American conditions. In it the diseases discussed are arranged in alphabetical order with numerous cross references. For instance, under Hypertrophy we find "Hypertrophy of the heart," "Hypertrophy of the thymus," "Hypertrophy of the tonsils," with cross references respectively to heart, thymus, and tonsils, while "Tracheitis" and "Tracheobronchitis" are referred respectively to bronchial catarrh, and under "Tuberculosis" we find cross references to bronchial gland disease, spondylitis, meningitis and peritonitis. Its convenience for reference and its authoritative character will undoubtedly give the English edition a wide circulation.

TRAUMATIC AFFECTIONS OF THE NERVOUS SYSTEM†

THIS work is nominally a second edition of the author's "Accident and Injury in their Relations to the Nervous System," but is practically a new work, as may be inferred from its new title, "Diseases of the Nervous System Resulting from Accident and Injury." The subject is considered from the neurologist's standpoint, and is taken up in four parts, viz., the introduction, organic effects of injuries of the nervous system, functional effects of injury, and medico-legal considerations. Particularly interesting to military medical officers is the chapter upon malingering, which is clearly and interestingly set forth.

**A Reference Handbook of Diseases of Children.* For Students and Practitioners. By Prof. Dr. FERDINAND FRÜHWALD. Edited by THOMPSON S. WESTCOTT, M. D. 8vo; pp. 553, with 176 illustrations. Philadelphia and London. W. B. Saunders Co., 1906.

†*Diseases of the Nervous System Resulting from Accident and Injury.* By PEARCE BAILEY, M. D. Second revised edition. 8vo; pp. 627, with 94 illustrations. New York, D. Appleton & Co., 1906.

Index.

- A**BBAMONDI, Lieutenant Colonel
 LUIGI, Further Researches into
 the causes which Tend to Bring
 About Serious Accidents to Divers,
 170, 372.
- Abdomen, Wounds of the, 293.
- Abscess of the Liver in the Philippines,
 328.
- ADAMS, Major CHARLES, The Physical
 Examination of Recruits for the Il-
 linois National Guard, 250.
- Adenitis, Inguinal, Treatment of, 107.
- Administration, Medico-Military, Index
 of, 125, 202, 294, 376, 457.
- African War, South, Surgical Report on
 the, Review of, 66.
- Alcoholic Neuritis, Beri-Beri or? 411.
- ALMY, Lieutenant Colonel LEONARD B.,
 Efficiency of the National Guard
 Hospital Corps, 105.
- AMBERG, Dr. EMIL, Ear Affections and
 Military Service, 285.
- Ambler, Sketch of James Markham Mar-
 shall, 363.
- American Journal of Clinical Medicine,
 64.
- American Medical Association on Army
 Medical Reorganization, 142.
- Appendicitis in the Philippines, 327.
- Arctic Explorer, Ambler, 363.
- Army and Navy First Aid and Equip-
 ment Board, Joint, 140, 458.
- Identification System, 391.
- Corps Examinations, 207.
- Service, British, 425.
- Officers, Losses of Japanese, 475.
- Army Medical Reorganization, American
 Medical Association on, 142.
- Reorganization Bill, 65, 214, 305, 391.
- Post Surgeon, Sanitary Duties of a, 40.
- Prevention of Disease in the, 1.
- Artillery Wounds, 116.
- Aseptic Results in the Philippines, 333.
- Association of Military Surgeons, Buffalo
 Meeting, 139, 458.
- Association of Military Surgeons, Illinois,
 65.
- "Asthma, A Sure Cure for," 185.
- AUSTIN, Surgeon H. W., The Disability
 from Hernia in Men Engaged in the
 Marine Services; The Operation for
 the Radical Cure with a Report of
 Cases, 335.
- B**ACILLURIA in Malta Fever, 106.
- Bandage, Triangular, of Nation-
 al First Aid Association, 58.
- BANISTER, Major JOHN MONRO, Medi-
 cal and Surgical Observations during
 a Three Years' Tour of Duty in the
 Philippines, 149, 259, 318.
- BANISTER, Major WILLIAM B., The De-
 tection of Simulated Defects of
 Vision, 278.
- Battlefield, First Aid on the, 395.
- Beri-Beri and Dhobie Itch, 421.
- in the Philippines, 165.
- or Alcoholic Neuritis?, 411.
- or Kakke, The Cause of, 411.
- Bill, Army Medical Reorganization, 65,
 214, 305, 391.
- Bone Surgery in the Philippines, 331.

- Braisted's Report on Japanese Naval Medical Services, Note on, 216.
- Brassard, 464.
- British Admiralty and the Association, 35.
- Army Medical Service, 425.
- BROUARDEL, Dr., Organization for Instruction in Colonial Medicine, 437.
- Buboes, Treatment of, 107.
- Bubonic Plague in the Philippines, 273.
- Buffalo Meeting, Association of Military Surgeons, 139, 458.
- Bullet, The New German, 88.
- BUTLER, Captain CHARLES S., Bacilluria in Malta Fever, 106.
- Danger from Typhoid Urine in Military Camps, 45.
- Military Statistics of Typhoid, 207.
- Mosquito Screens as Used by the Japanese Army in Manchuria, 111.
- Results in the Treatment of Typhoid in the German Army, 115.
- The Cause of Beri-Beri or Kakke, 411.
- Wounds Produced by Japanese Projectiles, 284.
- C**AMPS, Danger from Typhoid Urine in Military, 45.
- CARMODY, Major THOMAS E., Discussion of Medical Supplies, 39.
- CARTER, Major EDWARD CHAMPE, Some Observations Concerning the Controlling of Epidemics, 89.
- Carts, Russian Army Kitchen, 127.
- Chancroid, Buboes from, 107.
- Cholera in the Philippines, 149.
- in War, 12.
- Church, Captain James Robb. Ceremonies Attending the Conferring of a Medal of Honor Upon, 130.
- CLARK, Major THOMAS C., Discussion of Medical Supplies, 39.
- Clothing and Equipment of the Norwegian Foot Soldier, The Load, 317.
- COATES, Major GEORGE MORRISON, The Efficiency of the Enlisted Man in the Hospital Corps, with Particular Reference to the National Guard, 96.
- Cookery, Norwegian Field, 380.
- Cooking Without Fire, 449.
- Colonial Medicine, 437.
- CORBUSIER, Dr. HAROLD D., Military Headgear and its Relation to the Health of the Soldier, 342.
- D**AAE, Kaptein HANS, A Danish View of the Russian Army Medical Work in Manchuria, 373.
- Norwegian Field Cookery, 380.
- The Load. Clothing and Equipment of the Norwegian Foot Soldier, 317.
- Tuberculosis in Norwegian Military Schools, 186.
- DELOFFRE, Lieutenant SAMUEL M., The Red Cross in Italy, 184.
- The Ration of the Japanese Soldier and Beri-Beri, 445.
- Description and History, Medico-Military Index of, 123, 202, 294, 376.
- Dhobie Itch, Beri-Beri and, 421.
- Diagnosis and Treatment, Review of Caillé's, 310.
- Review of Boston's Clinical, 148.
- Tags, 463.
- Diagnostic Methods, Review of, 148.
- Diagnostics of Internal Medicine, Review of Second Edition, 67.
- Diarrhoea and Dysentery in War, 24.
- Dietetics for Nurses, Pattee's, Review of, 216.
- Diphtheria in the Philippines, 275.
- Disabled, Transportation of, 461.
- Divers, Further Researches into the Causes Which Tend to Bring About Serious Accidents to, 170, 372.
- Dogs, First Aid, 204, 297.
- Dressing, First Aid, 400.
- Shell Wound, 460.

Drunkenness in Military Service, 69.
Dysentery in the Philippines, 259.

EAR Affections and Military Service, 285.
Middle, and Mastoid, Review of Oppenheimer's, 309.

Education of the Japanese Medical Officer, 292.

Epidemics. Some Observations Concerning the Controlling of, 80.

Equipment Board. Report of the Joint Army and Navy First Aid and, 458.

General Army and Navy Medical, 463.
of Hospital Corps, 462.

of the Norwegian Foot Soldier, The Load, Clothing and, 317.

Estivo-Autumnal Fever in the Philippines, 271.

EVANS, Surgeon SHELDON G., Organization for Instruction in Colonial Medicine, 437.

Examinations, Army Medical Corps, 207.
Illinois National Guard Medical, 472.

Eye Malingerer, 278.

FEVER. Malarial, in the Philippines 271.
Malta. Bacilluria in, 106.

The Method of Spread of Typhoid, 378.
Typhoid, in the Philippines, 272.

Field Case, The Senn, 410.

Cookery, Norwegian, 380.

Finger Print and Photographic System, 391.

Fireless Cooking, 449.

First Aid and Equipment Board, Joint Army and Navy, 140, 458.

Text Book, Review of the Barton, 476.
Dogs, 204, 297.

on the Battlefield, 395.

Packet for Army and Navy, 459.

Packets. Some New, 56.

Folklore, A Case of Philippine Medical, 185.

FORD, Captain JOSEPH HERBERT, The Services of Negroes in Hospital Corps Detachments, 187.

French Treatment of Typhoid, 277.

Friedheim's Sanitary Sergeant, Review of, 215.

GALL Stones, Review of Moynihan's, 147.

Geneva Cross and Brassard, 464.

Genito-Urinary and Venereal Diseases, White and Martin, Review of, 147.

German Army, Typhoid in, 115.

Bullet, The New, 88.

Hospital Corps, 216.

Surgeon General in Chief, 65.

Gonorrhoea. Buboës from, 107.

GRAYSON, Assistant Surgeon CARY T., The Grayson-Graeme Hammock Mosquito Net, 191.

Gunshot Wounds, 116.

Indicted with the Japanese Small Caliber Mantle Bullet, 311.

Japanese, 284.

Probing of Recent, 405.

HALBERSTADT, Major GEORGE H., Discussion of Medical Supplies, 58.

HAMILTON, Colonel HENRY, A Virulent Outbreak of Tuberculosis in a Gurkha Regiment, 112.

HAMILTON, Dr. HUGH, The Initial Examination of the Recruit for the United States Army, 217.

Hammock Mosquito Net, The Grayson-Graeme, 191.

Hand Grenades, Wounds by, 116.

HANSELL, Lieutenant HAYWOOD S., An Emergency Field Service Tourniquet 48.

Hat Cord, Campaign, as a Tourniquet, 48.
The Soldier's, 342.

Headgear and its Relation to the Health of the Soldier, Military, 342.

- Hemorrhage, First Aid for, 401.
 Hernia in the Marine Services, 335.
 Radical Cure in the Philippines, 326.
 History and Description, Medico-Military,
 Index of, 125, 202, 294, 376.
 Honor for a Medical Officer, A Medal of,
 130.
 Hospital Corps Detachments, The Ser-
 vice of Negroes in, 187.
 Efficiency of, 96.
 Equipment of, 462.
 German, 216.
 Indian Army, 95.
 Pouch, Recommendations for, 464.
 School, Naval, 105.
 Hospital New York National Guard
 Field, 473.
 Ships, 464.
 HUNGATE, Captain JAMES B., Discussion
 of Medical Supplies, 40.
 Hygiene, Military, at West Point, A
 British Opinion Upon the Teaching
 of, 59.
 Military, Index of, 54, 126, 202, 294, 376.
 Review of Woodhull's Personal, 394.
- I**DENTIFICATION System, Army,
 391.
 Illinois Association of Military Sur-
 geons, 65.
 National Guard, The Physical Exami-
 nation of Recruits for the, 250.
 National Guard Medical Examinations,
 472.
 Index, Medico-Military, 54, 125, 202, 294,
 376, 456.
 India, Army Medical Officers of, 434.
 Indian Army Hospital Corps, 95.
 Inebriety in Military Service, 69.
 Infancy and Childhood, Review of Holt's
 308.
 Inguinal Adenitis, Treatment of, 107.
 Inn of Rest, Review of, 68.
 Instructions in the Navy, Sanitation and
 Medical, 473.
- International Clinics, Review of, 309.
 Medical Congress, Military and Naval
 Medicine at, 392.
 Intestinal Parasites in the Philippines,
 276.
 Intestine, Wounds of the, 293.
 Intoxication in Military Service, 69.
 Italian Divers, Physical Qualifications of,
 170, 372.
 Italy, Red Cross in, 184.
 Review of Naval Sanitary Statistics of,
 478.
- J**APAN in War, Red Cross Society
 of, 291.
 Review of Seaman's Real Triumph
 of, 477.
 Japanese Army, Mosquito Screens in the
 111.
 Death and Sick Rate, 53.
 Hospitals During War Time, Review
 of Richardson on, 308.
 Medical Officer, Preparation of, 292.
 Medical Officers, Losses Among, 475.
 Naval Medical Services, Note on Brais-
 ted's Report on, 216.
 Projectiles, Wounds Produced by, 284.
 Small Caliber Mantle Bullet. Gunshot
 Wounds Inflicted with the, 311.
- JARRETT, Major ARTHUR R., Discussion
 of Efficiency of the National Guard
 Hospital Corps, 105.
- JARVIS, Lieutenant Colonel NATHAN S.,
 Discussion of Efficiency of the Na-
 tional Guard Hospital Corps, 104.
- JONES, Major HOMER I., Discussion of
 Medical Supplies, 39.
- K**AKKE, Beri-Beri or, 165, 411,
 421.
 KEAN, Major JEFFERSON Ran-
 DOLPH, The Prevention of Disease
 in the Army and the Best Method of
 Accomplishing that Result, 1.
 Kitchen Carts, Russian Army, 127.

- KNUDSEN, Captain FREDRIK, Roentgen Ray Apparatus for War Purposes, 49.
- L**ATRINE, Field, 17.
 Litters, Japanese Naval, 41.
 Liver in the Philippines, Abscess of the, 328.
- LUNG, Surgeon GEORGE A., Alcohol a Depreciating Factor of Efficiency, 69.
- M**ALARIA in War, 26.
 Malarial Diseases in the Philippines, 271.
- Malingering, Eye, 278.
 Surgical, Review of, 478.
- Malta Fever, Bacilluria in, 106.
- Manchuria, A Danish View of the Russian Army Medical Work in, 373.
- MASON, Major CHARLES F., The Method of Spread of Typhoid Fever, 378.
- Massachusetts Volunteer Militia, 391.
- Medal of Honor for a Medical Officer, 130.
 for Major John O. Skinner, 140.
- Medical Corps Examinations, Army, 207.
 Department at Panama, 140.
 Department for the Virginia Volunteers 305.
 Examinations, Illinois National Guard, 472.
 Instruction in the Navy, Sanitation and, 473.
 Officers, Japanese, Losses Among, 475.
 Reorganization Bill, Army, 65, 214, 305, 391.
 Service, British Army, 425.
 Supply Table for the National Guard, Proposed Regimental, 36.
 Voyage to America, Review of Redondo's Military, 215.
- Medicine, Colonial, 437.
 Military, Index of, 203, 295, 377, 456.
- Medicines, Uniform Army and Navy Arrangement of, 463.
- Medico-Military Administration, Index of, 125, 202, 294, 376, 457.
- Medico-Military History and Description, Index of, 125, 202, 294, 376.
 Index, 54, 125, 202, 294, 376, 456.
- Michigan National Guard Medical Department, 65.
- Military Hygiene, Index of, 54, 126, 202, 294, 376.
- Medical Voyage to America, Review of Redondo's, 215.
- Medicine, Index of, 203, 295, 377, 456.
- Statistics of Typhoid, 207.
- Surgeons, Illinois Association of, 65.
- Surgery, Index of, 203, 295, 377, 456.
- Mines, Wounds by Land, 116.
- Modern Clinical Medicine, 476.
- Mosquito Net, The Grayson-Graeme Hammock, 191.
- Screens in the Japanese Army, 111.
- N**ATIONAL GUARD Field Hospital, New York, 473.
 Hospital Corps, 96.
- Medical Department, Michigan, 65.
- Medical Examinations, Illinois, 472.
- Proposed Regimental Medical Supply Table for the, 36.
- The Physical Examination of Recruits for the Illinois, 250.
- Naval Hospital Corps School, 105.
- Medical School Commencement, 392.
- Sanitary Statistics of Italy, Review of, 478.
- Stretchers, Japanese, 41.
- Navy, First Aid and Equipment Board, Army and, 140, 458.
- Medical Officers, Losses of Japanese, 475.
- Sanitation and Medical Instruction in the, 473.
- Negroes in Hospital Corps Detachments The Service of, 187.
- Neuritis, Beri-Beri or Alcoholic? 411.
- New York National Guard Field Hospital, 473.

News of the Services—

Abeken, Assistant Surgeon F. G., 382.
 Abington, Major Eugene H., 381.
 Adair, Dr. George F., 60, 134, 382.
 Adams, Major Charles, 65, 472.
 Allen, Lieutenant John H., 382, 467.
 Almy, Lieutenant Colonel L. B., 208.
 Ames, Assistant Surgeon M. H., 382.
 Amesse, P. A. Surgeon J. W., 382, 467.
 Anderson, P. A. Surg. J. F., 60, 208, 382.
 Angeny, Surgeon G. L., 208.
 Angwin, Asst. Surg. W. A., 134, 381.
 Appel, Lieut. Col. Daniel M., 300, 382.
 Ashburn, Captain Percy M., 208.
 Ashford, Captain Bailey K., 382.
 Asserson, P. A. Surgeon F. A., 382.
 Austin, Surgeon H. W., 382.
 Bachman, P. A. Surgeon R. A., 60.
 Backus, Assistant Surgeon J. W., 382.
 Bahrenburg, Asst. Surg. L. P. H. 60.
 Bailey, A. A. Surgeon C. A., 300.
 Dr. Edward, 300.
 Bailhache, Surgeon P. H., 467.
 Baker, Dr. Charles L., 382.
 Captain David, 467.
 Captain Frank C., 208.
 P. A. Surg. M. W., 208, 300.
 Banister, Lieut. Col. John M., 382, 467.
 Banks, Surgeon C. E., 60.
 Barber, Surgeon G. H., 134.
 Barney, Lieut. C. N., 60, 134, 208, 382.
 Bayley, Major Edmund W., 381.
 Bell, Surgeon W. H., 208, 381.
 Belknap, Asst. Surg. J. L., 60, 467.
 Benton, Surgeon F. L., 208, 300.
 Berry, P. A. Surgeon T. D., 60, 134.
 Bertollette, Medical Director D. N., 208.
 Bevans, Lieutenant James L., 383.
 Beyer, Med. Inspec. H. G., 60, 134, 208.
 Bogan P. A. Surgeon J. M., 208, 467.
 Boggess, Assistant Surg. J. S., 60, 383.
 Bourland, Captain Robert C., 381, 467.
 Bourke, Lieutenant James, 134.
 Boyer, Dr. Arthur I., 300.

News of the Services (Continued),

Boyer, Lieutenant P. L., 467.
 Bispham, Captain William N., 300.
 Bissell, Major William C., 381.
 Blackburn, A. A. Surg. T. C., 134.
 Blackwood, Surgeon W. J., 467.
 Blanchard, Lieutenant R. M., 383.
 Block, A. A. Surgeon W. H., 134.
 Bloombergh, Lieutenant H. D. 208, 383.
 Blue, P. A. Surg. Rupert, 60, 383, 467.
 Braisted, Surg. Wm. C., 140, 208, 458.
 Brechemin, Lieut. Col. Louis, 208, 383.
 Brechemin, Jr., Lieutenant Louis, 383.
 Brewer, Dr. Isaac W., 300.
 Briggs, Lieut. Col. Albert H., 208.
 Brooke, Jr., Lieutenant Roger, 383, 467.
 Asst. Surg. F. H., 383, 392, 467.
 Dr. John D., 60, 134.
 Captain William H., 134.
 Brophy, Lieutenant Truman W., 472.
 Brown, P. A. Surg. E. M., 208, 383, 467.
 Colonel George, 381.
 Dr. Ira C., 383.
 Dr. Wilmont E., 209, 467.
 Brownlee, Captain Charles Y., 134, 383.
 Bucher, Surgeon W. H., 134, 383.
 Buck, Lieutenant Carrol D., 383.
 Bullard, A. A. Surgeon J. T., 300.
 Burch, Captain Lucius E., 381.
 Burgess, Major William A., 381.
 Burkhalter, P. A. Surgeon J. T., 134.
 Burns, Captain W. A., 134.
 Bushnell, Major George E., 209, 467.
 Byars, Captain Caspar R., 134, 300, 467.
 Calhoun, Captain John Caldwell, 381.
 Campbell, Assistant Surg. F. E., 383.
 Brig. Gen. John, 468.
 A. A. Surgeon R. A., 134.
 Carrington, Surgeon Paul M., 134.
 Carroll, Lieut. James, 134, 209, 383.
 Carson, Dr. Samuel K., 134, 209.
 Carswell, Lieutenant R. L., 383.
 Cass, Dr. William E., 60, 468.

News of the Services (Continued),

- Chamberlain, Lieutenant W. P., 383.
 Chappellear, A. A. Surgeon F. D., 300.
 Chase, Dr. Alpha M., 383.
 Cheshire, Captain Waldo Lee, 381.
 Chidester, Captain W. C., 60, 383, 468.
 Church, Captain James R., 135.
 Clark, Lieutenant John A., 135.
 P. A. Surgeon Taliaferro, 135.
 Clarke, Major Joseph T., 209.
 Clayton, Captain J. B., 209, 300.
 Clinton, Captain Marshall, 381.
 Cofer, P. A. Surgeon L. E., 300.
 Coffin, Lieutenant Jacob M., 135.
 Cohn, Assistant Surgeon I. F., 383.
 Cole, Jr., Asst. Surg. H. W., 468.
 Collins, Lieutenant C. C., 60.
 Asst. Surg. George L., 383.
 Cone, Assistant Surgeon I. F., 300.
 Connor, Lieutenant Ch., 60, 468.
 Cook, Surgeon F. C., 209.
 Dr. William H., 300.
 Corbusier, Dr. Harold D., 383.
 Lieut. Col. William H., 209.
 Cordeiro, Surgeon F. J. B., 468.
 Corput, P. A. Surg. G. M., 61, 135, 209.
 Cowper, Lieutenant H. W., 61, 384.
 Craig, Lieutenant Charles F., 209.
 Crampton, Lieutenant George S., 381.
 Crosby, Major William D., 384.
 Cumming, P. A. Surgeon H. S., 61, 300.
 Currie, P. A. Surgeon D. H., 300.
 Curtis, A. A. Surgeon E. E., 135.
 Dale, Captain Frederick A., 209.
 Darnall, Captain Carl R., 140, 458.
 Daugherty, Captain Charles G., 381.
 Davidson, Captain Wilson T., 61.
 Davis, Lieut. Col. Wm B., 135, 300, 384.
 Lieutenant William T., 300, 468.
 Daywalt, Dr. George W., 61, 135.
 Dean, Lieutenant E. A., 135.
 Asst. Surg. F. W. S., 209, 384, 468.
 De Bruler, Asst. Surg. J. P., 209, 384.
 DeLaney, Lieutenant M. A., 384.

News of the Services (Continued),

- Dennis, Surgeon J. B., 301.
 Dessez, Assistant Surgeon P. T., 468.
 DeValin, Surgeon C. M., 135, 209.
 Assistant Surgeon Hugh, 384.
 Devereux, Captain J. R., 209, 384, 468.
 DeVries, Captain J. Carlisle, 384.
 DeWitt, Lieutenant Wallace, 301.
 Dickenson, Dr. Clarence F., 135, 209.
 Diehl, Surgeon Oliver, 135.
 Dillon, Dr. G. Parker, 209.
 Dorsey, A. S. B. H., 61, 135, 384, 468.
 Dougherty, Dr. James C., 209.
 Duke, Major John Williams, 381.
 Duncan, A. A. Surgeon G. F., 135.
 Lieutenant Louis C., 384.
 Dunn, P. A. Surgeon H. A., 301.
 Dutcher, Captain B. H., 468.
 Dykes, Asst. Surg. J. R., 209, 384, 468.
 Eager, Asst. Surg. General J. M., 61.
 Earle, P. A. Surgeon B. H., 135, 468.
 Eber, Dr. Albert H., 135, 301.
 Ebersole, Asst. Surg. R. E., 135, 384.
 Ebert, Asst. Surg. H. G., 61, 135, 468.
 Major Rudolph G., 301.
 Edwards, Captain James F., 210, 468.
 Egan, Major Peter R., 301, 384.
 Ekwurzel, Lieutenant George M., 384.
 Elmore, Asst. Surg. Bruce, 381.
 Enders, Dr. William J., 61, 301, 468.
 Evans, Surgeon S. G., 61, 468.
 Eytinge, A. Surg. E. O. J., 384, 392, 468.
 Farenholt, Surgeon A., 210, 384.
 Farr, Captain Charles W., 210.
 Farrow, Dr. Edward J., 61.
 Fauntleroy, Captain Powell C., 210.
 Feeney, Dr. John M., 301.
 Felts, Dr. Robert L., 468.
 Ferguson, Dr. James B., 135.
 Field, Surgeon J. G., 210, 301.
 Fife, Lieutenant James D., 135.
 Finney, General John M. T., 381.
 Flagg, Captain Charles E. B., 135, 468.
 Flint, Asst. Surg. J., 301, 384.

News of the Services, (Continued),

Floeckinger, Captain Frank C., 381.
 Ford, Captain Clyde S., 61, 210.
 Foster, Asst. Surg. A. D., 469.
 P. A. Surgeon M. H., 136, 210.
 Lieutenant Charles L., 135.
 Assistant Surgeon T. G., 384, 392.
 Fowler, General George Ryerson, 210.
 Francis, P. A. Surgeon E., 61, 136, 384.
 Freeman, P. A. Surgeon G. F., 210.
 Frick, Major Euclid B., 61.
 A. A. Surgeon John, 384.
 Fricks, P. A. Surgeon L. D., 61, 385.
 Frost, Asst. Surg. W. H., 385, 469.
 Fuller, Captain Leigh A., 469.
 Furlong, Surgeon F. M., 219.
 Gandy, Maj. Charles M., 210, 385, 469.
 Gapen, Lieutenant Nelson, 385, 469.
 Gardiner, Medical Inspector J. E., 210.
 Gardner, P. A. Surgeon C. H., 61.
 Dr. Fletcher, 385, 469.
 Garton, Surgeon W. M., 210.
 Gassaway, Surgeon J. M., 61.
 Gatewood, Surgeon James D., 210.
 Geddings, Captain F., 469.
 Gibner, Lieutenant H. C., 61.
 Gilchrist, Captain Harry L., 469.
 Goldberger, P. A. Surgeon Joseph, 136.
 Gordon, Jr., Lieutenant W. A., 385.
 Gosman, Lieutenant George H. R., 301.
 Graham, Surgeon David W., 65, 469.
 Gray, Lieut. Colonel William W., 210.
 Greene, P. A. Surgeon J. B., 136, 211.
 Greenleaf, Captain Henry S., 136.
 Grieger, Dr. Hubert, 469.
 Grieve, Asst. Surg. C. C., 211, 385, 469.
 Griffith, Gen. Jefferson Davis, 211.
 Griffiths, A. A. Surgeon T. H. D., 385.
 Grissinger, Lieutenant J. W., 136.
 Griswold, Dr. W. Church, 469.
 Gritman, Captain C. L., 381.
 Grubbs, Lieutenant R. B., 301.
 Guiteras, Surgeon G. M., 61.
 Gurney, Lieut. Samuel C., 301, 385.

News of the Services (Continued),

Guthrie, Surgeon J. A., 61, 211, 385.
 Assistant Surgeon, M. C., 136, 381.
 Haines, Assistant Surgeon J. P., 469.
 Hall, Dr. Henry M., 211, 385.
 Colonel John D., 385.
 Captain Joseph Arda, 381.
 Hallock, Maj. H. M., 211, 301, 385, 469.
 Halloran, Lieutenant Paul S., 385.
 Hallwood, Dr. James B., 136.
 Hanna, Major William James, 381.
 Hanner, Lieut. John W., 61, 211, 385.
 Hansell, Lieutenant Haywood, S., 301.
 Hart, A. A. Surgeon G. G., 61, 136.
 Hartsock, Captain Frederick M., 469.
 Harvey, Colonel Philip F., 385.
 Hasseltine, Dr. Hermon Erwin, 381.
 Hathaway, Asst. Surg. G. S., 385, 392, 469.
 Lieutenant L. M., 211, 469.
 Havard, Col. Valery, 61, 140, 391, 385, 458.
 Hays, Dr. Melville A., 469.
 Heard, Lieutenant George P., 385.
 Henkel, Lieut. Col. Julius F., 65.
 Heiner, Asst. Surg. Robert G., 381.
 Heizmann, Colonel Charles L., 385.
 Hereford, Dr. John R., 62, 211, 469.
 Herndon, Medical Inspector C. G., 136.
 Hobdy, P. A. Surgeon W. C., 211.
 Hoen, Assistant Surgeon W. S., 385.
 Hoff, Colonel John Van R., 211.
 Hogan, Dr. David D., 469.
 Holland, Dr. James William, 136.
 Holioway, Asst. Surg. J. H., 62, 211.
 Holt, P. A. Surgeon J. M., 62, 136.
 Houghton, A. A. S. Montafix W., 381.
 Howard, Colonel W. H., 65.
 Howe, Captain John Duston, 382.
 Hoyt, P. A. Surgeon R. E., 211, 470.
 Huggins, Captain John B., 301, 385.
 Hull, Assistant Surgeon H. F., 211.
 Hume, A. A. Surgeon Lea, 62.
 Huntington, Surgeon E. O., 62, 386.
 Lieutenant, P. W., 136.
 Hutton, Lieutenant Paul C., 62, 211.

News of the Services (Continued),

- Iford, Major Daniel William, 381.
 Imbriaco, Colonel Pietro, 136.
 Jay, Major D. Arthur, 381.
 Jenness, Assistant Surgeon B. F., 386.
 Johnson, Surgeon, M. K., 470.
 Johnston, Major William McC., 301.
 Jones, Assistant Surgeon E. L., 211.
 Dr. George H., 136.
 Judd, A. A. Surgeon H. W., 136.
 Kalloch, Surgeon P. C., 62, 211.
 Kaufman, Assistant Surgeon J. B., 386.
 Kean, Major Jefferson R., 136, 301.
 Keefer, Major Frank R., 302.
 Keller, Lieutenant William L., 211.
 Keen, A. A. Surgeon W. P., 136.
 Keene, Capt. Charles H., 381.
 Kerr, Surgeon D. B., 211, 386.
 P. A. Surgeon J. W., 62, 136.
 Kieffer, Major Charles F., 302, 470.
 Kiersted, Captain Henry S., 212.
 Kilbourne, Lieutenant E. D., 136.
 Kilmer, Major Theron W., 386.
 King, P. A. Surgeon W. W., 136, 470.
 Kirby-Smith, Captain R. M., 302.
 Kirkpatrick, Capt. Thomas J., 137, 302.
 Kneedler, Major William L., 386.
 Koerper, Lieut. Conrad E., 62, 386.
 Kohn, Dr. Charles F., 470.
 Koyle, Dr. Fred T., 302, 386, 470.
 Krebs, Lieutenant Lloyd Le R., 386.
 Kuhn, Dr. Charles F., 137, 212.
 Kurtz, A. A. Surgeon W. E., 302.
 Kuder, Assistant Surgeon W. S., 386.
 La Garde, Lieut. Col. Louis A., 302, 386.
 Lambert, Lieutenant Samuel E., 386.
 Lando, Asst. Surg. M. E., 386, 392.
 Langhorne, Surgeon C. D., 302, 470.
 Lavinder, Surgeon C. H., 386.
 Leach, Surgeon Philip, 137.
 Ledbetter, P. A. Surgeon R. E., 62.
 Leeper, Dr. John F., 62, 137, 212.
 Leuthold, Surg. Gen. Dr. von, 65.
 LeWald, Lieutenant Leon T., 212.

News of the Services (Continued),

- Lewis, Capt. William F., 137, 386, 470.
 Leys, Surgeon J. F., 212.
 Lindorme, Lieutenant A. H., 381.
 Lippitt, Major William F., 62, 470.
 Little, Lieutenant William L., 386.
 Lloyd, Asst. Surg. B. J., 137.
 Long, P. A. Surgeon J. D., 62.
 Dr. Stephen M., 212, 302, 386, 470.
 Lowe, Dr. Thomas S., 137.
 Lowndes, Surgeon C. H. T., 470.
 Lucky, A. A. Surgeon J. W., 386.
 Lumsden, Surgeon G. P., 302.
 P. A. Surgeon L. L., 470.
 Lynch, Maj. Chas., 62, 140, 386, 458, 470.
 Mabee, Lieutenant James I., 137.
 McAndrew, Lieutenant P. H., 302.
 McCallum, Dr. Francis M., 212, 302, 386.
 McCaw, Major Walter D., 302, 391.
 McClanahan, Asst. Surg. B. K., 137.
 McClintic, P. A. Surg. T. B., 62, 387.
 McConnon, Asst. Surg. G. H., 387, 392.
 McCord, Dr. Donald P., 470.
 McCormick, Maj. Louis Provance, 212.
 McCoy, P. A. Surgeon G. W., 387, 470.
 McCullough, Surgeon F. E., 212.
 McDonell, Asst. Surg. W. N., 212, 302.
 McKeon, Asst. Surg. F. H., 137, 212.
 McKinley, A. A. Surgeon W. R., 387.
 MacLachlan, Colonel Charles, 381.
 McLaughlin, P. A. Surgeon A. J., 212.
 McLean, Assistant Surgeon A. D., 470.
 McMillan, Dr. Clemens W., 302, 387, 470.
 McMurdo, A. A. Surgeon P. F., 137.
 Macy, Dr. Fred S., 137, 212, 302.
 Magruder, Surgeon G. M., 62, 302.
 Mareschal, Colonel H., 302.
 Marion, Major General Otis H., 212.
 Marquis, Lieut. Col. George Paull, 472.
 Marrow, Captain Charles E., 212, 387.
 Marshall, Asst. Surg. E. R., 387, 392.
 Maisteller, Surgeon E. H., 212, 387.
 Mathewson, P. A. Surgeon H. S., 470.
 Mayers, Assistant Surgeon G. M., 387.

News of the Services (Continued),

Mead, Surgeon F. W., 62, 470.
 Mears, Asst. Surg. J. B., 387, 392, 470.
 Mercer, Lieutenant Oliver Paul, 382.
 Merrick, Dr. John N., 137.
 Metcalfe, Lieutenant R. F., 62.
 Michels, Asst. Surg. R. H., 137, 387.
 Middleton, Captain Edward D., 382.
 Miller, Assistant Surgeon J., 62.
 A. A. Surgeon J. T., 62, 137.
 Moncrief, Lieut. William H., 137, 470.
 Moncure, A. A. Surgeon J. A., 212.
 Moore, P. A. Surgeon Dunlop, 302.
 P. A. Surgeon J. M., 387.
 Morris, Surgeon L., 470.
 Lieutenant Samuel J., 212.
 Morse, Captain Arthur W., 212.
 Lieutenant Charles F., 387.
 Moseley, Colonel Edward B., 387.
 Mount, Dr. James R., 62, 137.
 Mudd, Major Harvey Gilmer, 382.
 Munger, Asst. Surg. C. B., 387, 392.
 Munson, Captain Edward L., 212.
 Assistant Surgeon F. M., 387.
 Murphy, Asst. Surg. J. F., 137, 212.
 Murtagh, Lieutenant John A., 212, 387.
 Nash, Surgeon F. S., 302.
 Neilson, P. A. Surgeon J. L., 62.
 Nelson, Jr., A. S. H. T., 387, 392, 470.
 Lieutenant Kent, 387.
 Newlove, Dr. George W., 137, 212.
 Newton, Dr. Ralph, 387, 471.
 Noble, Lieutenant Robt. E., 62, 387, 471.
 Norton, Surgeon O. D., 302.
 Nydegger, P. A. Surgeon J. A., 63, 302.
 Oakley, P. A. Surgeon J. H., 302, 471.
 O'Connor, Lieutenant R. P., 387.
 Offutt, Captain William Nelson, 382.
 Old, Asst. Surg. E. H. H., 392, 471.
 Olsen, Asst. Surg. G. M., 388, 392, 471.
 Olson, Asst. Surg. E. T., 387.
 Orvis, Surgeon R. T., 212.
 Osgood, Lieutenant George, 382.
 Oswald, Major Francis L., 382.

News of the Services (Continued),

Owen, Major William O., 63.
 Page, Captain Henry, 137, 302, 471.
 P. A. Surgeon John E., 137, 213.
 Parker, Dr. G. Dillon, 388.
 Parkman, Dr. Wallace E., 63, 137, 303.
 Patterson, A. A. Surgeon A., 137.
 Lieutenant Robert U., 388.
 Pease, Asst. Surgeon T. N., 381, 471.
 Peck, Dr. Luke B., 303.
 Perley, Lieut. Col. Henry O., 388, 471.
 Pettus, Asst. Surg. Gen. W. J., 63, 303.
 Pettyjohn, Asst. Surgeon Joseph, 63.
 Pickrell, Surgeon C., 213.
 Pilcher, Lieutenant Paul Monroe, 388.
 Pinquard, Dr. Joseph, 63, 138, 471.
 Plummer, P. A. Surgeon R. W., 303.
 Pocock, Captain James N., 382.
 Porter, Dr. Elias H., 471.
 Assistant Surgeon F. E., 213, 303.
 Major Joseph Y., 388.
 Captain Ralph S., 473.
 Powell, Lieut. William A., 138, 471.
 Pugh, Jr., Asst. Surgeon W. S., 388.
 Purnell, Lieutenant Harry F., 213.
 Dr. Julius M., 213, 386.
 Purviance, Major William E., 303.
 Pyles, Lieutenant Will L., 303.
 Randall, Asst. Surg. J. A., 471.
 Ransdall, Asst. Surg. R. C., 63, 138.
 Raymond, Major Henry I., 63.
 Reagles, Dr. James, 138, 303, 388.
 Rebert, Dr. M. A., 303.
 Reed, A. Surg. E. U., 381, 388, 392, 471.
 Asst. Surg. T. W., 388, 392.
 Reeves, Asst. Surg. I. S. K., 471.
 Reilly, Lieutenant John J., 213.
 Rennie, Asst. Surg. W. H., 213, 471.
 Reno, Lieutenant William W., 388.
 Reynolds, Captain Charles R., 213.
 Major Frederick P., 138, 213.
 Richard, Major Charles, 388.
 Richardson, A. A. Surg. F. A., 138, 381.
 A. A. Surgeon N. D., 388.

News of the Services (Continued),

- Richardson, P. A. Surgeon R. R., 213.
 Surgeon Thomas F., 63, 138.
 Dr. William H., 303.
 Riggs, Surgeon C. E., 138.
 Assistant Surgeon R. E., 138.
 Rixey, Surg. Gen. Presley M., 213.
 Roberts, Lieutenant William, 213, 388.
 Captain William M., 213, 473.
 Robertson, Sergeant 1st Class, D., 471.
 Asst. Surg. H. McG., 63, 471.
 Robnett, Asst. Surg. A. H., 388.
 Rockhill, Captain Edward P., 63, 213.
 Rosenau, P. A. Surgeon M. J., 303, 388.
 Rossiter, Asst. Surg. P. S., 388.
 Rucker, Asst. Surg. W. C., 63, 388, 471.
 Ruffner, Captain E. L., 63, 303, 471.
 Russell, Captain Nelson G., 382.
 Salmon, Assistant Surgeon T. W., 138.
 Saneyoshi, Baron Yasuzumi, 303.
 Scott, Lieut. George H., 138, 213, 471.
 Dr. James R., 303.
 Schaller, Asst. Surgeon W. F., 389, 471.
 Schwerin, A. A. Surg. L. H., 138, 213, 303.
 Seaman, Major Louis Livingston, 213.
 Sellers, Asst. Surg. F. E., 389, 392, 471.
 Senn, Colonel Nicholas, 65, 138, 213, 389.
 Shaw, Asst. Surg. H., 63, 389.
 Lieutenant Herbert G., 303, 473.
 Shellenberger, Dr. James E., 213, 303.
 Shockley, Captain M. A. W., 303.
 Shook, Asst. Surg. F. M., 389, 392.
 Captain Jay R., 213, 303.
 Shortlidge, Lieutenant E. D., 303.
 Shurly, A. A. Surgeon Ernest L., 382.
 Sievers, Dr. Robert E., 23.
 Skinner, Captain George A., 138.
 Slater, Dr. Ernest F., 63.
 Smart, Lieutenant Robert, 389.
 Smith, Surgeon A. C., 63.
 Major Edward Sanborn, 382.
 Assistant Surgeon F. C., 389, 471.
 P. A. Surgeon C. G., 389.
 Dr. Henry H., 389.

News of the Services (Continued),

- Smith, Lieutenant Herbert M., 138.
 Lieutenant L. L., 214.
 Assistant Surgeon W. B., 303.
 Snoddy, Lieutenant Cary A., 214.
 Snyder, Major Henry D., 63, 214.
 Songer, Major Fred. S., 382.
 Sprague, P. A. Surgeon E. K., 138.
 Spratt, Assistant Surg. R. D., 138, 304.
 Springwater, Dr. Samuel A., 472.
 Stalnaker, Asst. Surg. P. R., 389, 392, 472.
 Stanton, Captain Samuel C., 65, 472.
 Stark, Major Alexander N., 389.
 Steadman, Jr., A. A. Surg. W. G., 472.
 Steele, Medical Inspector J. M., 214, 472.
 Steer, Captain Samuel L., 138, 304.
 Steger, Assistant Surg. E. M., 63, 472.
 Steiner, Staff Surgeon Johann, 214.
 Stephenson, Major William, 304.
 Stepp, P. A. Surgeon J., 63.
 Stimson, P. A. Surgeon W. G., 138.
 Stone, General Alexander J., 389.
 Surgeon E. P., 214.
 Stokes, Surg. Charles F., 140, 214, 458.
 Straub, Major Paul F., 389.
 Strine, P. A. Surgeon H. F., 63.
 Stuart, P. A. Surgeon Allan, 63.
 Stuckey, Dr. Harrison W., 138, 214, 304.
 Suggs, Dr. Frank, 389.
 Suzuki, Surgeon General S., 138.
 Sweazey, Lieutenant Verge E., 214, 389.
 Swift, Lieutenant William J., 472.
 Takaki, Baron Kanehiro, 139.
 Talbott, Lieutenant E. M., 139.
 Taylor, Asst. Surgeon J. L., 389, 392.
 A. A. Surgeon J. S., 64.
 Terry, General Marshall O., 304.
 Thompson, Surgeon J. C., 139, 214.
 Thornburgh, Lieutenant R. M., 304.
 Thorp, Dr. Charles W., 139, 214, 304.
 Tipton, Colonel William R., 332.
 Torney, Lieut. Col. George H., 304.
 Trask, Assistant Surgeon J. W., 64.
 Traynor, P. A. Surgeon J. P., 64, 390.

News of the Services (Continued),

- Truby, Captain A. E., 389.
 Captain Willard F., 389.
 Tukey, Dr. William H., 214, 472.
 Turnbull, Major Charles S., 139.
 Turrill, Brigadier Gen. Henry S., 390.
 Tuttle, Dr. George B., 139, 472.
 Acting Assistant Surgeon J., 472.
 Tyree, A. A. Surg. F. W., 64, 304.
 Usher, Captain Francis M. C., 390.
 Van Dusen, Lieutenant James W., 304.
 Van Kirk, Dr. H. H., 214
 Van Poole, Lieutenant G. McD. 304.
 Vaughan, Asst. Surg. Gen. G. T., 64.
 Verner, Assistant Surgeon W. W., 472.
 Vickery, Assistant Surgeon E. A., 64.
 von Ezdorf, P. A. Surgeon R. H., 64.
 Vose, Captain William E., 304.
 Voss, Major John William, 382.
 Wolfe, Captain Edwin P., 304.
 Woodbury, Captain Frank T., 305, 472.
 Wood, Lieutenant William C., 382.
 Woodall, Lieutenant William P., 390.
 Woods, A. Surg. E. L., 391, 392, 472.
 Dr. Oscar W., 139, 214.
 Woodson, Major R. S., 305.
 Woodward, Assistant Surgeon J. S., 64.
 Surgeon R. M., 64.
 Wadhams, Lieutenant Sanford H., 64.
 Wales, Major Philip G., 304.
 Walker, Dr. Freeman V., 390.
 Wall, Dr. Francis M., 304.
 Warbasse, Captain James P., 304, 390.
 Ward, Assistant Surgeon W. K., 64.
 Warner, Asst. Surg. R. A., 390, 392.
 Warren, P. A. Surgeon B. S., 64.
 Wasdin, Surgeon E., 139.
 Webb, P. A. Surgeon U. R., 390.
 Captain Walter D., 472
 Wertenbaker, Dr. C. I., 64, 139, 304, 472.
 Surgeon C. P., 64, 390.
 Wheeler, Asst. Surg. L. H., 64, 214.
 Whitcomb, Lieutenant Clement C., 390.
 White, Asst. Surg. E. C., 381, 390, 391.

News of the Services (Concluded),

- White, Assistant Surgeon E. W., 472.
 Surgeon J. H., 64.
 Dr. J. Samuel 64, 139, 214.
 Whitmore, Lieut. Eugene R., 304, 390.
 Whitney, Dr. Walter, 304, 390.
 Wickes, Assistant Surg. G. L., 472.
 P. A. Surgeon H. W., 139.
 Wightman, Assistant Surg. W. M., 139.
 Willcox, Major Charles, 139.
 Wille, P. A. Surgeon C. W., 64.
 Williams, Dr. Adrian D., 472.
 Lieutenant A. W., 139
 Surgeon L. L., 139
 Passed Assistant Surgeon R. B., 472.
 Wilson, Lieut. Compton, 214, 390, 472.
 P. A. Surgeon R. L., 64.
 Captain William H., 214.
 Winn, A. A. Surgeon C. K., 139, 390.
 Wise, A. A. Surgeon A. H., 64.
 Med. Dir. John C., 140, 304, 458.
 Young, P. A. Surgeon G. B., 390, 472.
 Zalesky, Assistant Surgeon W. J., 390.
 Zenneck, Surg. Julius Frederick, 382.
 NIMIER, Prof. H., Wounds by Artillery
 Projectiles, Hand Grenades and Land
 Mines in the War in Manchuria, 116.
 Norwegian Field Cookery, 380.
 Foot Soldier, The Load, Clothing and
 Equipment of the, 317.
 Military Schools, Tuberculosis in, 186.
 Nursing in Acute Infectious Fevers,
 Review of, 477.
 in the British Army, 434.
 OPERATING Room and the Patient. Review of, 477.
 Orderly Pouch. Recommendations
 for, 462.
 Orthopedic Surgery, Review of Young's
 394.
 Osler's Practice, Review of Sixth Edition.
 67.
 OTTO, Dr. W., A Roentgen Ray Apparatus
 for War Purposes, 49.

- P**ACKET for Army and Navy, First Aid, 459.
 Packets, Some New First Aid, 56
 Panama, Medical Department at, 140.
 Parasites, Intestinal, in the Philippines, 276.
 Peritoneal Wound, A Case of, 110.
 Philippine Insurrection, Disease in, 8.
 Islands Medical Association, 391.
 Medical Folklore, A Case of, 185.
 Philippines, Medical and Surgical Observations During a Three Years' Tour of Duty in the, 149, 259, 318.
 PILCHER, Major JAMES EVELYN, A Medal of Honor for a Medical Officer, 130.
 First Aid Dogs, 204, 297.
 Discussion of Medical Supplies, 39.
 Some New First Aid Packets, 56.
 The "Old Guard" at Buffalo, 458.
 The Russian Army Kitchen Carts, 127.
 The Story of the Russian Side, 296.
 Plague, Bubonic, in the Philippines, 273.
 Plaster of Paris Splints, 404.
 Post Surgeon, Sanitary Duties of a, 40.
 Pouch, Recommendations for Hospital Corps, 463.
 Recommendations for Orderly, 462.
 Precedence of Army Medical Officers, 473.
 President Roosevelt on Military Medical Conditions and Necessities, 132.
 Prevention of Disease in the Army, 1.
 Probing of Recent Gunshot Wounds, 405.
 Prussian Army, Surgeon General of the, 305.
 PURNELL, Contract Surgeon JULIUS M., Beri-Beri and Dhobie Itch, 421.
- R**AINSFORD, Colonel W. J. R., A Brief Sketch of the Evolution of the Medical Service of the British Army, 425.
 Rebellion, Disease in War of, 8.
 Rebellion, Reminiscences of the, 473.
 Recruits, Ear Affections in, 285.
 for the Illinois National Guard, The Physical Examination of, 250.
 for the United States Army, The Initial Examination of the, 217.
 Simulated Defects of Vision in, 278.
 Red Cross in Italy, 184.
 Society of Japan in War, 291.
 Redondo's Military Medical Voyage to America, Review of, 215.
 Regimental Medical Supply Table for the National Guard, Proposed, 36.
 Reminiscences of the Rebellion, 473.
 Reorganization, American Medical Association on Army Medical, 142.
 Bill, Army Medical, 65, 214, 305, 391.
 Russian Army Kitchen Carts, 127.
 Army Medical Work in Manchuria, A Danish View of the, 373.
 Side, The Story of the, 296.
 Russo-Japanese War, Disease in, 6.
 ROGERS, Major BUELL S., Discussion of Efficiency of the National Guard Hospital Corps, 105.
 ROTHGANGER, Surgeon GEORGE, Treatment of Inguinal Adenitis, 107.
 Royal Army Medical Corps, 425.
 Roths Jahresbericht, Review of, 146.
 Royal Army Medical Corps of the British Militia, 139.
 Roosevelt, President, Remarks in Confering a Medal of Honor upon a Medical Officer, 130.
 on Military Medical Conditions and Necessities, 132.
 Roentgen Ray Apparatus for War Purposes, 49.
- S**ALLE, Major, The Military Hygiene of Water,—The Ordinary Soldier's Drink, 194.
 Sanitation, and Medical Instruction in the Navy, 473.
 Military, 1.

- Sanitary Duties of a Post Surgeon, 40.
 Sergeant, Review of Friedheim's, 215.
 Scarlet Fever in the Philippines, 275.
 Schjerning, Note on Surgeon General, 305.
 School, Japanese Medical, 292.
 Seaman Prize Essay, 1.
 Real Triumph of Japan, Review of, 477.
 SENN, Colonel NICHOLAS, First Aid on the Battlefield, 395.
 Sergeant, Review of Friedheim's Sanitary, 215.
 Shell Wound Dressing, 460.
 Ships, Hospital, 464.
 Shock, First Aid Treatment of, 401.
 SHORT, Dr. ALFRED TERRY, "A Sure Cure for Asthma," 185.
 Simulated Defects of Vision, The Detection of, 278.
 Skin, Review of Mracek's Diseases of, 310.
 Skinner, Major John O., Medal of Honor for, 140.
 SLATTERY, Lieutenant JOHN R., The Military Hygiene of Water, The Ordinary Soldier's Drink, 194.
 Smallpox in the Philippines, 275.
 Soldier, Military Headgear and its Relation to the Health of the, 342.
 The Load, Clothing and Equipment of the Norwegian Foot, 317.
 SOMMER, Major EDGAR F., Discussion of Efficiency of the National Guard Hospital Corps, 105.
 South African War, Surgical Report on the, Review of, 66.
 Spanish-American War, 7.
 Splints, Plaster of Paris, 404.
 Wire Netting, 404.
 Sprue and its Management in the Philippines, 269.
 STANDISH, Captain MYLES. Discussion of Efficiency of the National Guard Hospital Corps, 104.
 STANTON, Captain SAMUEL CECIL, Proposed Regimental Medical Supply Table for the National Guard, 36.
 Statistics of Armies, Medical, 4.
 of Italy, Review of Naval Sanitary, 478.
 of Typhoid, Military, 207.
 STOKES, Surgeon CHARLES FRANCIS, Discussion of Causes of Accidents to Divers, 184.
 Discussion of Naval Hospital Corps, 105.
 Stretchers Used on Japanese War Ships, Remarks on, 41.
 Supply Table for the National Guard, Proposed Regimental Medical, 36.
 Surgeon, Sanitary Duties of a Post, 40.
 Surgeon General in Chief, German, 65.
 of the Prussian Army, 305.
 Surgeons, Japanese Military and Naval, Losses of, 475.
 Military, Illinois Association of, 65.
 Surgery, Military, Index of, 203, 295, 377, 456.
 Review of Fowler's, 393.
 Surgical Conditions in the Philippines, 318.
 Surgical Malingering, Review of, 478.
 Report on the South African War, Review of, 66.
 SUZUKI, Surgeon General SHIGEMICHI, Remarks on Stretchers Used on Japanese War Ships, 41.
 Syphilis, Buboes from, 107.
 TAGS, Diagnosis, 463.
 TAYLOR, Passed Assistant Surgeon JAMES S., Beri-Beri or Alcoholic Neuritis?, 411.

- THOMAS, Fleet Surgeon J. LLOYD, A British Opinion on the New United States Army Order Regarding the Training of the Line Officer in Military Hygiene, 59.
- Tourniquet, An Emergency Field Service 48.
- Transportation of Wounded, 461.
- Triangular Bandage of National First Aid Association, 58.
- Tropical Medicine, 437.
- Tuberculosis in a Gurkha Regiment, A Virulent Outbreak of, 112.
in Norwegian Military Schools, 186.
in the Philippines, 270.
- Typhoid, The Method of Spread of, 378.
in the Philippines, 272.
in War, 12.
French Treatment of, 277.
in the German Army, 115.
Military Statistics of, 207.
Urine in Military Camps, Danger from. 45.
- U** RINE in Military Camps, Danger from Typhoid, 45.
- V** ENEREAL Adenitis, 107.
Diseases Among Troops, 27.
Virginia Volunteers, Medical Department for the, 305.
- Vision, The Detection of Simulated Defects of, 278.
- W** AR Purposes, Roentgen Ray Apparatus for, 49.
Ships, Remarks on Stretchers Used on Japanese, 41.
- Water, The Military Hygiene of,—The Ordinary Soldiers's Drink, 194.
- WEAVER, Colonel JOSEPH K., Discussion of Medical Supplies, 38, 40.
- West Point, A British Opinion upon the Teaching of Military Hygiene at, 59.
- WILCOX, Major CHARLES, Recent Report on Prophylaxis and Cure of Beri-Beri in the Dutch Indies, 448.
- Wounds by Artillery Projectiles, Hand Grenades and Land Mines in the War in Manchuria, 116.
- WILSON, Captain WILLIAM H., A Case of Peritoneal Wound, 110.
- Wire Netting Splints, 404.
- WISE, Medical Director JOHN CROPPER, James Markham Marshall Ambler, 363.
Discussion of Causes of Accidents to Divers, 184.
Discussion of Japanese Naval Stretchers, 44.
- Wounded, Transportation of, 461.
- Wounds Inflicted with the Japanese Small Caliber Mantle Bullet, Gunshot, 311.
of the Abdomen, 293.
Probing of Recent Gunshot, 405.
Produced by Japanese Projectiles, 284.
- WREDEN, Colonel ROMAN ROMANOVITSCH DE, A Consideration of the Gunshot Wounds Inflicted with the Japanese Small Caliber Mantle Bullet, 311.
Note on Colonel, 296.
- WURTZ, Dr., Organization for Instruction in Colonial Medicine, 437.
- X** -RAY Apparatus, Military, 49.
- Y** EAR Book of Medicine and Surgery, 1905, Review of, 146.
Yellow Fever in the Philippines. 275.

